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THE SOCIAL VESPIDAE OF THE GUIANAS, PARTICULARLY OF BRITISH GUIANA

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No. 7—*The Social Vespidae of the Guianas, particularly
of British Guiana*
(Hymenoptera)

BY JOSEPH C. BEQUAERT

The present comprehensive account of the social wasps (Vespidae) includes keys for the identification of the South American genera and of the species known from any of the three Guianas. This area, based on political boundaries, may be regarded as a fairly natural unit, although the fauna is similar to that of the adjoining forests of northern Brazil and eastern Venezuela. Its wasp fauna is, moreover, rather uniform and I have no doubt that all the species included in this paper will eventually be found in British Guiana.

For the present, only the forms definitely known from British Guiana are fully discussed, all the recorded localities of these being listed. Social wasps live in colonies of several or many individuals and are therefore abundant enough to be collected casually. Their nests are also an added attraction to the general collector. Hence they are much better known than most other Hymenoptera, with the possible exception of the social bees. Most probably few South American species remain to be discovered, and this is particularly true of the Guianas, one of the parts of tropical America most thoroughly investigated by entomologists.

The Guianas are unusually rich in social wasps and would be ideal for the study of their fascinating habits. I list from the entire area 98 structural species (and 32 additional color varieties), belonging to 16 genera (all those known from South America, except three: *Synocoides*, *Clypearia* and *Protonectarina*). Of these, 84 species (and 18 varieties) are definitely recorded from British Guiana, 25 of them (and 8 varieties) having not yet been taken in either Dutch or French Guiana. The wasp fauna of the British portion thus appears to be somewhat better known than that of the others, the differences being entirely due to insufficient collecting, in my opinion.

The following 43 species and varieties were taken at Kartabo within the quarter square-mile area of jungle extensively studied by the New York Zoological Society's Department of Tropical Research.

Polistes versicolor var. *vulgaris*

Polistes testaceicolor

Polistes melanosoma

Polistes deceptor

Mischocyttarus carbonarius

Mischocyttarus collarellus
Mischocyttarus duckei
Mischocyttarus flavicans
Mischocyttarus labiatus
Mischocyttarus prominulus
Mischocyttarus smithii
Mischocyttarus superus
Polybia liliacea
Polybia striata
Polybia jurinei
Polybia bifasciata
Polybia bifasciata var. *quadricincta*
Polybia chrysothorax
Polybia micans
Polybia rejecta
Polybia occidentalis
Polybia occidentalis var. *parvula*
Polybia bistriata
Polybia tinctipennis var. *nebulosa*
Stelopolybia cajennensis
Stelopolybia pallens
Stelopolybia obidcensis
Stelopolybia constructrix
Stelopolybia testacea
Stelopolybia pallipes var. *anceps*
Metapolybia cingulata
Protopolybia minutissima
Protopolybia minutissima var. *binominata*
Protopolybia pumila
Apoica pallida
Apoica pallida var. *arborca*
Apoica pallida var. *pallens*
Apoica pallida var. *albimacula*
Brachygastra scutellaris
Synoeca surinama
Synoeca virginea
Parachartergus smithii

Sixteen additional forms listed below were taken in nearby localities, within a fifteen-mile radius from Bartica:

Pseudochartergus chartergoides
Mischocyttarus foveatus
Mischocyttarus heliconius
Mischocyttarus lemoulti

Mischocyttarus oecothrix
Mischocyttarus rotundicollis
Polybia catillifex
Polybia dimidiata
Polybia gorytoides
Polybia rufitarsis
Polybia sericea
Polybia singularis
Stelopolybia paraensis
Stelopolybia angulata
Stelopolybia fulvofasciata
Protopolybia holoxantha
Parachartergus fulgidipennis var. *griseus*

The combined two lists of 59 forms give a fair idea of the wasps to be found in that particular section of British Guiana. Additions may be expected, some of the more common species of the coastal lowlands, such as *Polistes canadensis* and *Brachygastra lecheguama*, not being included. Nevertheless, it is fairly certain that several of the Guiana species do not occur in the Bartica area, particularly those that have been reported only from the hilly or mountainous areas near the Amazon watershed (Mt. Roraima, etc.).

Acknowledgments. The present study was based upon material derived from many sources. Foremost were the collections made over a number of years in the Kartabo district by Dr. W. Beebe and his associates at the Tropical Research Station of the New York Zoological Society. Additional specimens were collected by B. E. Dahlgren, C. Geijskes, A. Mackie, the late J. G. Myers, J. Ogilvie, O. W. Richards, Neal Weber, the late W. M. Wheeler, and F. X. Williams. I have also included Guiana records from the collections of the American Museum of Natural History, Carnegie Museum, Cornell University (Dept. of Entomology), Field Museum of Natural History, Museum of Comparative Zoölogy and United States National Museum.

References to the original descriptions of most of the species and color forms, and their synonyms, mentioned in this paper will be found in Ducke's Catalogue of the Social Wasps of Brazil (1918, Rev. Mus. Paulista, 10, pp. 313-374).

Table of Neotropical Genera of Social Vespidae

(Based Mainly on Females and Workers)

1. Third and fourth segments of mid and hind tarsi asymmetrical, with inner apical lobe much longer than outer one. First abdominal segment much narrowed, stalk-like. . . . *Mischocyttarus*
All segments of mid and hind tarsi symmetrical. 2
2. Thoraco-abdominal muscle inserted in a narrow, slit-like furrow at the lower end of the propodeum. First abdominal segment short or slightly elongate, but not stalk-like. *Polistes*
Thoraco-abdominal muscle inserted in a broadly ovate furrow at the lower end of the propodeum. 3
3. Ocelli very large, nearly as wide as basal diameter of flagellum. Mesepisternum completely divided into an upper and a lower plate. Abdomen long and slender, but first segment not stalk-like. *Apoica*
Ocelli normal or slightly swollen, much less than basal diameter of flagellum. In doubtful cases, mesepisternum undivided. 4
4. Scutellum very prominent, its vertical hind face forming an angle with the horizontal anterior portion, which projects beyond the short, vertical postscutellum. First abdominal segment short and narrowed, but not stalk-like. *Brachygastra*
Scutellum and postscutellum placed one behind the other in one slope or convexity; scutellum sometimes slightly more raised, but not projecting beyond postscutellum. 5
5. Hind margin of postscutellum considerably extended as a sharp angle or broad lobe into the median concavity of the propodeum. 6
Hind margin of postscutellum either straight or forming a slight obtuse angle or a broad curve. 7
6. Clypeus usually much longer than wide, with nearly straight apical margin. Outer orbits very narrow. Postscutellum divided into a short, horizontal basal area and a vertically abrupt apical portion. *Pseudochartergus*
Clypeus either wider than long or at most about as long as wide, more or less produced medially at apex. Outer orbits of normal width. Postscutellum forming a single oblique convexity.
Protopolybia
7. Labial palpi bearing a heavy, erect, curved seta some distance from the tip. Clypeus not longer than wide, more or less produced medially at apex. 8

- Labial palpi always of 4 segments, without erect, heavy seta before the tip. Maxillary palpi of 6 segments 10
8. Maxillary palpi of 5 segments; labial palpi of 3 segments. Small species, with stalk-like first abdominal segment. *Lcipomeles*
 Maxillary palpi of 6 segments. First abdominal segment sometimes narrower than second, but rarely stalk-like 9
9. Labial palpi of 4 segments *Pseudopolybia*
 Labial palpi of 3 segments *Parachartergus*
10. First abdominal tergite distinctly divided into a slender basal stalk and a broader apical portion which is part of the remaining swollen abdomen. Outer orbits narrow. Clypeus longer than wide, with nearly straight apical margin *Charterginus*
 First abdominal tergite either without basal stalk or, if stalked, the remainder of the tergite is also much narrower than the succeeding segments and not part of them 11
11. Clypeus much longer than wide, with nearly straight apical margin. Outer orbits very narrow 12
 Clypeus either wider than long or at most as wide as long, rarely slightly longer (in some males longer than wide); apical margin more or less produced, sometimes minutely bidentate. Outer orbits normal 13
12. Abdomen sessile, the first segment not at all stalk-like. Dorsum of thorax flattened. Postscutellum oblique throughout *Synoccoides*
 Abdomen with the first segment distinctly stalk-like. Dorsum of thorax not flattened. Postscutellum with a narrow basal area, followed by an abruptly vertical portion *Clypearia*
13. Abdomen sessile, the first segment not stalk-like but posteriorly part of the remaining swollen abdomen. Postscutellum with a narrow basal area slightly tuberculate in the middle, followed by an abruptly vertical portion *Chartergus*
 First abdominal segment more or less stalk-like, always much narrower than the succeeding swollen segments. Postscutellum not so divided 14
14. First abdominal segment very long and slender, nearly as long as thorax, with prominent spiracular tubercles *Metapolybia*
 First abdominal segment much shorter than thorax; spiracular tubercles weak 15
15. First abdominal segment forming a linear stalk with subparallel sides, flattened above; second segment abruptly widened. Clypeus with two minute apical teeth *Epipona*

- First abdominal segment always much wider at apex than at base.
 Clypeus ending in one tooth or obtusely rounded off at apex. 16
16. First abdominal segment with slightly prominent spiracular tubercles; remaining segments abruptly widened at base, sharply conical and somewhat compressed apically. *Synoeca*
 Abdomen elongate-oval and more or less depressed. 17
17. Clypeus very wide, almost twice as wide as long in the female.
 Ocelli far apart, as far from one another as from the eyes.
Protonectarina
 Clypeus usually as wide as long or slightly longer than wide or moderately wider; very rarely almost twice as wide as long, in which case the ocelli are close together. 18
18. Mesepisternum undivided. *Polybia*
 Mesepisternum divided by an oblique suture into an upper and a lower plate. *Stelopolybia*

The following names proposed for supra-specific groups of Neotropical social wasps are not given generic status in this paper.

Agelaia Lepeletier (1836), based upon *Agelaia fuscicornis* Lepeletier (1836), is at present unrecognized. The species was described without locality. I suggest that it may have been a *Polistes*.

Caba R. v. Ihering (1904) = *Brachygastra*.

Chartergellus J. Bequaert (1938). Subgenus of *Parachartergus*.

Clypeopolybia Brèthes (1923) was based on a species of *Mischocyttarus*.

Coloboclypeus Brèthes (1926) is at present unrecognized. Perhaps it was based upon a solitary vespid.

Eupolybia Dalla Torre (1904) = *Polybia*.

Gymnopolybia Ducke (1914) = *Stelopolybia*. See the discussion under that genus.

Hypochartergus Zavattari (1906). Subgenus of *Charterginus*.

Megacanthopus Ducke (1904). Subgenus of *Mischocyttarus*.

Melissaia Shuckard (1841) = *Brachygastra*.

Monacanthocnemis Ducke (1905). Subgenus of *Mischocyttarus*.

Myrapetra White (1841) = *Polybia*.

Nectarina Swainson and Shuckard (1940) = *Brachygastra*.

Nectarinella J. Bequaert (1938). Subgenus of *Parachartergus*.

Tatua H. de Saussure (1854) = *Epipona*.

Xanthocaba "Cameron" Meade Waldo (1914) = *Pseudopolybia*.

Subfamily POLISTINAE

POLISTES Latreille (1802)

This genus is represented in South America by more structural species than in any other part of the World. Those known from the Guianas or likely to occur there may be separated by the following key.

1. Mesopleura with not even a trace of prepectal suture. 2
 Mesopleura at least with traces of prepectal suture (in most cases strongly marked) 7
2. Body thickset. Abdomen ovate-fusiform, widest before mid-length, more or less depressed apically; first tergite strongly convex and, in profile, abruptly sloping toward the base, seen from above as wide at apex as long or wider. 3
 Body slender. Abdomen elongate-fusiform, widest about mid-length, more or less compressed apically; first tergite moderately convex and, in profile, gradually sloping toward the base, seen from above longer than wide at apex. 4
3. Female: head much swollen; oculo-malar space longer than one-third of height of eye seen in front; clypeus not or barely touching eyes. Male: clypeus pentagonal, with bluntly pointed apex, little or scarcely separated from lower inner orbits. . . *P. carnifex*
 Female: Head moderately swollen; oculo-malar space at most as long as one-third of height of eye, usually shorter; clypeus touching inner orbits for a distance equalling one-third to one-half of oculo-malar space. Male: clypeus subquadrate, with straight or weakly curved anterior margin, widely separated from inner orbits. *P. major*
4. Propodeum very distinctly or coarsely striate. 5
 Propodeum finely or obsoletely striate. 6
5. Occipital carina lacking over lower third of outer orbit, where the cheek is completely rounded off into the gula; upper part of outer orbit with an irregular slight depression near marginal carina. *P. canadensis*
 Occipital carina continued over lower third of outer orbit, though much weaker than in upper part, the cheek separated from the gula by a distinct ridge; upper part of outer orbit without depression near marginal carina. *P. apicalis*
6. Occipital carina strong, continuing along lower outer orbit to base of mandible. Humeral collar of pronotum strongly raised.
 *P. goeldii*

- Occipital carina low, absent along lower fourth of outer orbit, where the cheek is rounded off into the gula. Humeral collar of pronotum moderately raised *P. versicolor*
7. Propodeum coarsely striate. Occipital carina absent along lower half of outer orbit, where the cheek is rounded off into the gula. Clypeus touching eyes over a short distance in female, widely separated from them in male. Mesepisternum divided by an oblique suture into an upper and a lower plate *P. major*
- Propodeum finely or obsoletely striate. Occipital carina usually continuing along outer orbit to base of mandible 8
8. Outer orbit much widened in upper third, where the occipital carina is strongly raised and wing-like. Male: clypeus longer than wide, broadly rounded off at apex; all segments of flagellum longer than wide *P. occipitalis*
- Occipital carina not strongly raised nor wing-like at upper third of outer orbit 9
9. Head much swollen; outer orbit markedly wider than eye in profile; occipital carina slightly sinuate about mid-height. Mesepisternum without oblique suture dividing it into an upper and a lower plate 10
- Head not swollen; outer orbit at most as wide as eye in profile; if wider, mesepisternum partly divided by an oblique suture. 11
10. Clypeus touching eyes over a distance equal to about one-third of length of oculo-malar space. (Head and thorax black; abdomen red) *P. bicolor*
- Clypeus touching eyes over a distance equal to a little over half the length of oculo-malar space. (Entirely oily black) . . . *P. deceptor*
11. Body thickset. Abdomen ovate-fusiform, widest before mid-length, more or less depressed apically; first tergite strongly convex and, in profile, abruptly sloping toward base, seen from above as wide at apex as long or wider. Occipital carina usually weak along lower outer orbit near base of mandible 12
- Body slender. Abdomen elongate-fusiform, widest about mid-length, more or less compressed apically; first tergite moderately convex and, in profile, gradually sloping toward base, seen from above longer than wide at apex. Occipital carina usually high and ridge-like along outer orbit to near base of mandible. 13
12. Mesepisternum with at least a trace of oblique suture. Clypeus of both sexes touching eyes over a distance equal to at most one-third of length of oculo-malar space; lower subocular portion in female longer than upper interocular part. Male: clypeus ending

- in a bluntly pointed apex; thirteenth segment of antenna slightly curved. *P. ruficornis*
- Mesepisternum without even a trace of oblique suture. Clypeus of both sexes touching eyes over a distance equal to one-half or more of oculo-malar space; lower subocular portion in female about as long as upper interocular part. Male: projecting apex of clypeus broadly rounded off; thirteenth segment of antenna straight. *P. pacificus*
13. Occipital carina very faint or obsolete over lower third of outer orbit. Face of male much lengthened; clypeus higher than wide, touching eyes over a distance equal to about one-third of length of oculo-malar space. Thorax densely silky. *P. subsericeus*
- Occipital carina sharp as far down as base of mandible. Face of male not conspicuously lengthened; clypeus about as wide as high. Thorax not densely silky 14
14. Male: Occipital carina very high and collar-like along outer orbit; outer orbit narrower than eye in profile; clypeus about as wide as long; mesepisternum with a complete but very weak oblique suture. (Head and thorax black; abdomen red. Female not seen) *P. erythrogaster*
- Occipital carina low, not collar-like along outer orbit. 15
15. Outer orbit wider than eye in profile. Clypeus of both sexes touching eyes over a distance less than length of oculo-malar space. Oblique suture of mesepisternum distinct in lower half, obsolete in upper half. (Head, thorax and two basal segments of abdomen mostly russet with yellow markings, remainder of abdomen black). *P. testaceicolor*
- Outer orbit as wide as or slightly narrower than eye in profile. Clypeus of both sexes touching eyes over a distance about equal to length of oculo-malar space. Oblique suture of mesepisternum lacking or very faintly indicated. (Almost entirely black). *P. melanosoma*

Polistes bicolor Lepelletier (1836) is known from French Guiana, Dutch Guiana, Brazil (Amazon Basin), Colombia and Peru.

Polistes pacificus Fabricius (1804). No doubt some of the color forms of this species occur in British Guiana. The typical form is known from French Guiana, as well as from Mexico, Colombia, Trinidad, Brazil and Peru; var. *liliciosus* H. de Saussure (1854), from French Guiana, Brazil and Peru; var. *actaeon* Haliday (1836) is definitely known from Brazil and Paraguay, with one rather doubtful

record from French Guiana; and var. *geminatus* Fox (1898) I have seen from French Guiana and Brazil.

Polistes apicalis H. de Saussure (1858) was described from "Guiana". There is as yet no definite record from British Guiana. I have seen it from Guatemala, Honduras and Ecuador.

Polistes carnifex (Fabricius, 1775). This species was discussed in a paper published in 1936 (Rev. de Entomologia, 6, pp. 376-383) It occurs from central Mexico to northern Argentina (Misiones) in a number of color forms, four of which I have distinguished by name. As it is often confused with *Polistes major* (Palisot de Beauvois), I have included that species also in my key, although it does not seem to occur in the Guianas. Typical *carnifex* has not been reliably reported from the Guianas, but *Polistes variegata* Lepeletier (1836), described from Cayenne, may have been this form. Var. *rufipennis* Latreille (1817) is known only from Panama, French Guiana (*Polistes chlorostoma* Lepeletier, 1836, from Cayenne, is a synonym) and Dutch Guiana; and var. *ochreata* Spinola (1851), from Dutch Guiana, Trinidad, Tobago, Colombia, and Bonacca (off the coast of Honduras). Both these color forms no doubt occur in British Guiana.

POLISTES VERSICOLOR (Olivier, 1791)

One of the most common social wasps of South America, where it varies extraordinarily in color. In a revision published in 1934 (Rev. de Entomologia, 4, pp. 147-157), I recognized nine varieties by name. I have since described two more (1940, Ent. News, 51, pp. 81-82). Four of these are known from the Guianas.

1. Typical form. Only first and second abdominal tergites marked with yellow. I have seen it from Brazil, northern Argentina, Paraguay, Costa Rica, and British Guiana (Demerara): It was described from French Guiana.

2. Var. *vulgaris* J. Bequaert (1934). The most common form of the species, with yellow markings on at least tergites 1 to 3, often 1 to 6. I have seen it from British Guiana (Kartabo), Panama, Colombia, Venezuela, Trinidad, Dutch Guiana, Brazil, Paraguay, northern Argentina, Peru, Bolivia, and Ecuador.

3. Var. *myops* (Fabricius, 1798). Only the second tergite is marked with yellow spots. It was originally described from French Guiana. I have seen it from Peru. It has been recorded also from Brazil and (perhaps by error) from Trinidad and Paraguay.

4. Var. *kaieteurensis* J. Bequaert (1934). Abdomen without yellow

markings, but the apical segments somewhat orange. Thorax with many yellow markings. Described from British Guiana: Kaieteur.

POLISTES SUBSERICEUS H. de Saussure (1854)

I have seen a specimen from British Guiana: Mt. Roraima. The species is also known from Dutch Guiana, Brazil and Paraguay.

POLISTES ERYTHROGASTER Ducke (1905)

I have seen one specimen from British Guiana: Mt. Roraima. The species is also known from the Amazon Basin in Brazil.

POLISTES TESTACEICOLOR J. Bequaert (1937)

Synonym: *Vespa analis* Fabricius, 1798 (not of Fabricius, 1775).

Apparently a common wasp in British Guiana: Bartica; Georgetown; Warina, N. W. District; Tumatumari, Potaro River; Kaieteur; Kartabo; Mt. Everard; Arakaka. I have also seen it from Dutch Guiana, French Guiana, Brazil (Amazon Basin), Bolivia, Colombia, Venezuela, Peru and Costa Rica.

This species is often heavily stylopized. One female bears seven empty pupae of Strepsiptera, protruding from the hind margins of second (1), third (2) and fourth (2) tergites, and of third (1) and fourth (1) sternites. One female from Bartica is labelled as taken on carrion of agouti.

POLISTES RUFICORNIS H. de Saussure (1853)

The typical form of this species is known only from Uruguay, Paraguay and northern Argentina. I described the var. *demeraraensis* J. Bequaert (1937) from British Guiana (Mahaica River, Demerara; Georgetown; Blairmont), and I now also refer to this form the specimens from Brazil and Bolivia which I had called var. *biglumoides* in 1937 (Arch. Inst. Biol. Veg., Rio de Janeiro, 3, p. 180).

The unrecognized *Polistes guyanensis* Cameron (1912), described from Potaro River, British Guiana, was most probably a color form of *P. ruficornis* and perhaps merely a variant of var. *demeraraensis*.

POLISTES OCCIPITALIS Ducke (1904)

British Guiana: Mt. Roraima. Also known from French Guiana, Dutch Guiana, Brazil, Bolivia, eastern Peru, and Colombia.

POLISTES MELANOSOMA H. de Saussure (1853)

British Guiana: Bartica; Kartabo; west bank of Demerara River. Also known from Brazil and Paraguay.

POLISTES DECEPTOR W. A. Schulz (1905)

British Guiana: Kartabo. Also known from Dutch Guiana, Brazil and Peru.

POLISTES CANADENSIS (Linnaeus, 1758)

This, the most widely distributed of the American *Polistes*, extends from south of the Great Lakes in the United States to northern Patagonia, and occurs also in some of the Lesser Antilles, but not in the Greater Antilles. In a recent revision (1943, in process of publication), I recognize 19 color forms; but 2 only are known thus far from the Guianas.

1. Typical *canadensis*. Fairly uniformly light russet to dark mahogany-brown; head and thorax sometimes slightly lighter than abdomen. No yellow markings, or sometimes a narrow apical margin on the first tergite. Wings either uniformly purplish-black or dark russet, or more or less russet toward the tips and darker basally. This typical form occurs in British Guiana: Demerara; Georgetown; Mt. Roraima. It is found also in French Guiana and Dutch Guiana and ranges from southern Arizona to northern Argentina and Rio Grande do Sul. It does not occur in Canada.

2. Var. *infuscatus* Lepeletier (1836). *P. canadensis amazonicus* W. A. Schulz (1905) is a synonym. Like typical *canadensis*, but occiput and outer orbits more or less extensively yellow. Wings either uniformly purplish-black or slightly to extensively russet apically and darker at the base. First tergite with or without narrow apical yellow fascia. This form is perhaps more common in British Guiana than typical *canadensis*: Demerara; Onverwagt. I have also seen it from Brazil (Amazon Basin), Dutch Guiana, French Guiana, Colombia, Panama, Peru and Ecuador.

Polistes urecolata "Klug" Erichson (1848, in Schromburgk, Reisen in Britisch Guiana, 3, p. 590; no sex; British Guiana) was evidently based upon some form of *P. canadensis*; but the description is too brief for recognition.

Subfamily POLYBIINAE

MISCHOCYTTARUS H. de Saussure (1853)

Mischocyttarus is the largest Neotropical genus of social wasps, some 73 structural species and several color forms being described to date (1943). This number will be more than doubled in the near future, as both Mr. O. W. Richards and Mr. J. F. Zikan are revising the genus and intend to describe many new forms. Meanwhile it is possible only to enumerate those known from British Guiana.

MISCHOCYTTARUS CARBONARIUS H. de Saussure (1853)

Megacanthopus ruficornis Cameron (1912) is probably a synonym.

British Guiana: West bank of Demerara River; Kaieteur; Kartabo. Also known from French Guiana, Brazil, Bolivia, Peru and Panama.

MISCHOCYTTARUS CERBERUS Ducke (1918)

The typical form is known from Dutch Guiana and Brazil. The var. *acheron* Richards (1940) was described from British Guiana: Mazaruni Settlement.

MISCHOCYTTARUS COLLARELLUS Richards (1940)

Common in British Guiana: Mazaruni Settlement; Cuyuni River, 3 miles from Kartabo; Potaro River, on trail between Tukeit and Kaieteur; Moraballi Creek, Essequibo River; Kartabo; Aremu, Bartica District. Also known from Dutch Guiana, Brazil and Panama.

MISCHOCYTTARUS COLLARIS Ducke (1904)

British Guiana: Berbice Savannas; Courantyne River; Demerara. Also known from Brazil.

MISCHOCYTTARUS DUCKEI R. du Buysson (1909)

British Guiana: Kartabo. Originally described from French Guiana.

MISCHOCYTTARUS FLAVICANS Fabricius (1804)

Megacanthopus goeldii Ducke (1905) is a synonym.

British Guiana: Kartabo; Mazaruni River. Also known from French Guiana, Dutch Guiana, Brazil, Bolivia, Peru and Ecuador.

MISCHOCYTTARUS FOVEATUS Richards (1940)

Described from British Guiana: First Falls of Essequibo River; Issororo, Northwest District; Island near Monkey Jump; Moraballi Creek, Essequibo River.

MISCHOCYTTARUS HELICONIUS Richards (1941)

Described from British Guiana: Moraballi Creek, Essequibo River; Potaro River, on trail between Tukeit and Kaieteur.

MISCHOCYTTARUS INJUCUNDUS (H. de Saussure, 1854)

The typical form is known from Brazil and Colombia. The var. *bimarginatus* (Cameron, 1912) was described from British Guiana, without more definite locality. I have seen it from Demerara; Mazaroni River; Blairmont; and Georgetown

MISCHOCYTTARUS LABIATUS (Fabricius, 1804)

Megacanthopus atriceps Cameron (1912) is a synonym.

British Guiana: Mt. Roraima; Rupununi River; Kaieteur; west bank of Demerara River; Kartabo; Bartica. Also known from French Guiana, Dutch Guiana, Trinidad, Brazil, Venezuela, Paraguay, Peru, Colombia and Panama.

MISCHOCYTTARUS LECOINTEI (Ducke, 1904)

British Guiana: Tukeit; Kaieteur. Also known from French Guiana, Dutch Guiana and Brazil.

MISCHOCYTTARUS LEMOULTI (R. du Buysson, 1909)

British Guiana: Moraballi Creek, Essequibo River. Originally described from French Guiana.

MISCHOCYTTARUS METATHORACICUS (H. de Saussure, 1854)

British Guiana: Essequibo River; Oko River, a tributary of the Cuyuni. Originally described from French Guiana; also known from Brazil and Peru.

MISCHOCYTTARUS METOECUS Richards (1940)

Described from British Guiana: Mazaruni Settlement. Also known from Dutch Guiana and Brazil.

MISCHOCYTTARUS OECOTIIRIX Richards (1940)

Described from British Guiana: Kaieteur Savanna, Potaro Valley; Canister Falls, Cattle Trail Survey; Moraballi Creek, Essequibo River.

MISCHOCYTTARUS PROMINULUS Richards (1941)

Described from British Guiana: Kartabo; Mazaruni Settlement. Also known from Bolivia.

MISCHOCYTTARUS ROTUNDICOLLIS (Cameron, 1912)

Originally described from British Guiana, without more definite locality. I have seen it from Kalacoon and Penal Settlement, Bartica District.

MISCHOCYTTARUS SMITHII H. de Saussure (1853)

Megacanthopus violaceipennis Cameron (1912) is a synonym.

British Guiana: Kartabo; Essequibo River. Also known from French Guiana and Brazil.

MISCHOCYTTARUS SUPERUS Richards (1940)

Described from British Guiana: Mazaruni Settlement; Bartica-Potaro Road; Potaro River, on trail between Tukeit and Kaieteur; I have also seen it from Kartabo.

MISCHOCYTTARUS SURINAMENSIS (H. de Saussure, 1854)

British Guiana: Kamakusa; Courantyne River; Trail between Tukeit and Kaieteur; Demerara. Also known from Dutch Guiana and Brazil.

MISCHOCYTTARUS SYNOECUS Richards (1940)

Described from British Guiana: Amatuk, Potaro River; Mazaruni Settlement. Also known from Brazil and Panama.

Polybia nigriceps Cameron (1912), described from British Guiana, without more definite locality, was a species of *Mischocyttarus*. The

name is preoccupied by *Polybia fastidiosuscula* var. *nigriceps* Zavattari (1906).

Mr. O. W. Richards (*in litt.*) includes British Guiana in the range of *Mischocyttarus drewseini* (de Saussure, 1857).

Mischocyttarus socialis (H. de Saussure, 1854) (= *Vespa atra* Olivier, 1791; not of Gmelin, 1790) was taken in French Guiana, Cayenne being the type locality of Olivier's *V. atra*.

Mischocyttarus alfkenii (Ducke, 1904) I have seen from Dutch Guiana.

PSEUDOCHARTERGUS Ducke (1905)

I have revised this genus in a recent paper (1938, *Rev. de Entomologia*, **9**, pp. 103-105), where I recognized only two species. A study of more extensive material in the collections of Cornell University has led me to separate a third species, *Pseudochartergus panamensis* (Zavattari, 1906) (= *Chartergus acutiscutis* Cameron, 1907). This differs from *P. chartergoides* in the relatively shorter clypeus of the female (about as wide as long) and in the lateral ridges of the propodeum being more rounded off. All localities from British Honduras, the Republic of Honduras, Panama and Colombia, which I listed in 1938 under *P. chartergoides* var. *cinctellus*, refer to *P. panamensis*.

Only one of the three species is known from the Guianas.

PSEUDOCHARTERGUS CHARTERGOIDES (Gribodo, 1891)

I distinguish by name three color forms of this species, but only the var. *cinctellus* (Fox, 1898) occurs in British Guiana: Kartabo. It is known also from Dutch Guiana and Brazil.

Charterginus pallidibalteatus Cameron (1912), described from British Guiana, was most probably *P. chartergoides* var. *cinctellus*.

CHARTERGINUS Fox (1898)

This genus was revised in 1938 (*Rev. de Entomologia*, **9**, pp. 99-103). Only one of the four species is known from the Guianas.

CHARTERGINUS HUBERI Ducke (1904)

British Guiana: Source of Essequibo River; Waratuk. It was described from the Amazon Basin of Brazil. I have seen it also from Dutch Guiana and French Guiana (Maroni). *Polybia fulvicauda*

Cameron (1912), described from British Guiana, is a synonym of *C. huberi*.

PROTOPOLYBIA Ducke (1905)

This genus, containing some of the smallest South American wasps, is well represented in the Guianas. In addition to the species included in the key, three forms described by Cameron from British Guiana are as yet unrecognized.

Key to Guiana Species

1. Concavity of propodeum narrow, groove-like. First abdominal tergite slender, the basal third or more stalk-like. Clypeus about as wide as high. 2
- Concavity of propodeum broad, either very shallow or deeply bowl-shaped. First abdominal tergite thickset, not or very briefly stalk-like at base. 3
2. Thorax rather dull, with distinct, scattered, medium-sized punctures; abdomen impunctate. Postscutellum nearly twice as wide as greatest length, with triangular, bluntly pointed apical extension. (Extensively and fairly uniformly testaceous-yellow; almost bare). *P. holoxantha*
 Body dull or slightly shiny, usually with a few discrete larger punctures. Postscutellum at most one and one-half times as wide as greatest length, with the apical extension rounded off, tongue-like. (Black, with few or many yellowish markings).
P. minutissima
3. First abdominal tergite very broad and short, cap-shaped, passing gradually into the base of the second, which is not constricted from it. Outer orbit unusually widened in lower half; occipital carina low and ending some distance from base of mandible. Clypeus nearly twice as wide as high. Thorax thickset, about as high as long, with many coarse punctures; humeral collar high, shouldered at the sides; postscutellum nearly twice as wide as long; sides of propodeum bulging, somewhat compressed, though broadly rounded off. *P. emortalis*
 First abdominal tergite not cap-shaped, always set off from the more swollen second. Thorax longer than high; sides of propodeum low, depressed, though broadly rounded off. 4
4. Clypeus one and one-half times to nearly twice as wide as high, smooth and shiny. Outer orbit about as wide as eye, not reced-

ing; occipital carina high, extending to near base of mandible. Concavity of propodeum deep; postscutellum about one and one-half times as wide as long; humeral collar high, more or less shouldered at the sides. Body very shiny, with distinct, scattered, medium-sized to large punctures, with many long, erect hairs

P. picteti

Clypeus much less than one and one-half times as wide as high.

Outer orbit narrower than eye, receding. Postscutellum slightly though distinctly shorter than wide. Body dull or nearly dull; erect hairs short and sparse. 5

5. Thorax about one and one-fourth times as long as high. Body dull, fairly uniformly covered with small, discrete punctures. Clypeus about one and one-third times as wide as high. (Mostly pale yellow). *P. amarella*

Thorax nearly one and one-half times as long as high. Body not or slightly shiny, with microscopic, alutaceous sculpture and a few small, discrete punctures. Clypeus at most one and one-fourth times as wide as high. (Black, marked with yellow). . . *P. pumila*

Protopolybia picteti (H. de Saussure, 1854) is a widely distributed species, of which I recognize by name 9 color forms. Only one of these has been reported from the Guianas. *P. picteti* var. *bella* (R. von Ihering, 1903) was originally described (as *Polybia bella*) from Dutch Guiana. It is also known from Brazil, Peru and Bolivia. It is characterized by the ground color of the body being black or slightly brownish-black, with many yellow markings on thorax and abdomen (usually no yellow stripes on mesonotum) and 3 pale spots on the base of tergite 2, the median spot being transverse (wider than long).

PROTOPOLYBIA HOLOXANTHA (Ducke, 1904)

This species is probably rather common in British Guiana: Kamakusa; Moraballi Creek, Essequibo River; Penal Settlement, Bartica District. It is also known from French Guiana and Brazil (Oyapoc and Amazonas).

PROTOPOLYBIA MINUTISSIMA (Spinola, 1851)

I recognize four color forms of this species in the Guianas.

1. Pale markings few, whitish or very pale yellow; base of tergite 2 without cross-band or lateral spots. 2

- Pale markings more extensive, pale to bright yellow; base of tergite 2 with a cross-band or a pair of spots 3
2. Thorax not or very little marked with pale yellow or whitish; no spots on propodeum typical *minutissima*
 Thorax more profusely marked with pale yellow or whitish; a pair of spots on propodeum var. *binominata*
3. Body profusely marked with yellow; base of tergite 2 with a continuous and usually broad cross-band var. *sedula*
 Body less extensively marked with yellow; base of tergite 2 with a pair of streaks or spots var. *exigua*

The typical form occurs in British Guiana (Kartabo), as well as in Peru and Brazil.

The var. *binominata* (W. A. Schulz, 1906) appears to be the most common form, being known from British Guiana (Kartabo; Georgetown; Demerara), Colombia, Panama, Ecuador, Peru, and Bolivia. *Polybia minutissima* H. de Saussure (1854) was this form, not Spinola's typical *minutissima*.

The var. *exigua* (H. de Saussure, 1854) is fairly common in Brazil and has been reported from French Guiana, Trinidad, and eastern Peru (Iquitos).

The var. *sedula* (H. de Saussure, 1854) is widespread and has been taken in Dutch Guiana, French Guiana, Brazil, Venezuela, Trinidad, Colombia, Panama (Darién), Peru, Bolivia, and Paraguay. I regard *Polybia diligens* F. Smith (1857) as a synonym of *sedula*.

PROTOPOLYBIA AMARELLA, new species

Fig. 1

Female. Head flattened, slightly wider than thorax; seen in front, subcircular, scarcely wider than high; from above, rectangular with receding hind corners, about two and one-half times as wide as long; occipital margin with a broad and shallow inward curve. Vertex and genae margined by a fine carina, which ends a short distance from the base of the mandible; gena slightly narrower than eye in profile. Oculomalar space lacking. Inner orbits about one and one-half times as far apart on vertex as at clypeus. Ocelli fairly large, in a nearly equilateral triangle; posterior ocelli slightly farther from eyes than from each other. Interantennal shield broad, not set off, with a longitudinal groove over upper half; antennae somewhat farther apart than from eyes. Frons slightly convex. Clypeus at its narrowest about one and one-third

times as wide as high, irregularly heptagonal, contiguous to the eyes over about one-half of sides; apical margins moderately produced, ending in a blunt, rounded point. Mandible with an oblique cutting edge of four sharp, subequal teeth. Antenna: scape long, slender, slightly curved; second segment unusually long, only slightly shorter than third, scarcely swollen; remainder of flagellum slightly club-

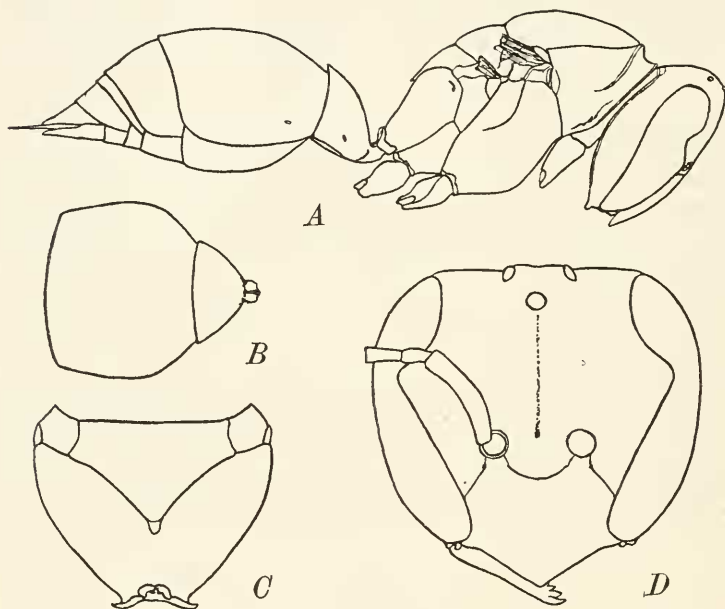


Fig. 1. *Protopolybia amarella* J. Bequaert. Female. A, body in profile; B, first and second tergites from above; C, postscutellum and propodeum from behind; D, head in front view.

shaped. Thorax rather thickset; in profile, about one and one-fourth times as long as high; from above, nearly one and two-thirds times as long as wide before tegulae. Pronotum nearly straightly truncate anteriorly; humeral margin with a distinct obtuse ridge which stops at the sides, forming slight, blunt humeral angles; dorso-lateral areas sloping; lower anterior margin of ventro-lateral areas with a swelling indented by a deep pronotal fovea. Mesopleuron much swollen, without mesepisternal suture; deep mesepimeral suture ending abruptly

and far from metapleuron. Upper sclerite of metapleuron ending nearly square below, not extended along meso-metapleural suture. Scutellum slightly and evenly convex, with a very weak median impressed line. Postscutellum triangular, scarcely swollen, its median area about one and one-third times as wide as long, uniformly sloping or nearly vertical throughout, the lower extension very long, with a free, raised, tongue-like apex. Propodeum little swollen, nearly vertical in profile; median concavity very broad and shallow. First abdominal tergite short and cup-shaped, with a very short, broad stalk, which is not wing-like at the sides; seen from above, gradually widened, slightly shorter than wide at apex, about half as wide at apex as second segment; in profile, very gradually and moderately convex. Second tergite from above wider than long, gradually widened at base; in profile, moderately and evenly convex. Apical margins of all segments very slightly thickened. Mid tibiae with two spurs. Claws symmetrical, unarmed. Venation: second cubital cell much higher than wide; third cubital long, about one and one-third times as long on cubitus as on radius; radial cell very long, acute; basal vein ending in subcosta close to the large stigma.

Dull; fairly uniformly covered with small, discrete punctures, more weakly on frons; clypeus and mandibles almost impunctate. Pubescence sparse, short, erect, somewhat longer on propodeum and abdomen. Eyes bare.

Pale yellow, with ferruginous blotches on antennae, tip of mandible, tibiae, tarsi and under side of abdomen. A few brownish-black spots as follows: a streak behind each posterior ocellus; a transverse row of four spots on the prehumeral depressed slope of pronotum; narrow sutures of mesonotum, scutellum and postscutellum; a median line over anterior half, a line on each side over posterior half, and a pair of elongate spots on disk of mesonotum. Disk of second tergite with a median blackish triangle showing through the yellow integument. Wings hyaline, with a yellowish tinge; veins and stigma pale yellowish-testaceous.

Length (h.+th.+t. 1+2): 5.1 mm.; of fore wing, 5 mm.

BRITISH GUIANA: Source of Essequibo River, female holotype (J. Ogilvie). — COLOMBIA: La Chorrera, Rio Igara-Paraná, Intendencia Amazonas, female paratype (J. C. Bradley). — Holotype at Mus. Comp. Zoöl., Cambridge, Mass.; paratype at Dept. Ent., Cornell University.

The almost completely yellow body makes this a striking insect.

PROTOPOLYBIA EMORTUALIS (H. de Saussure, 1855)

This species occurs in two color forms.

1. Typical *emortualis* is more or less extensively ferruginous, particularly on the abdomen, and has pale yellowish markings. It was described from Brazil and Ducke reported it from Dutch Guiana.

2. The var. *ducke* (R. du Buysson, 1905) (= *Charterginus duckeri* R. du Buysson) differs only in the ground color of the body, including the abdomen, being black. It was originally described from Brazil (Bahia); but Ducke reports it from eastern Peru (Iquitos) and I have seen it from British Guiana (Upper Essequibo River). It is doubtful whether this form is worth separating from typical *emortualis*.

PROTOPOLYBIA PUMILA (H. de Saussure, 1863)

Two forms of this species are known in the Guianas.

1. Typical *pumila* is extensively marked with yellow, the mesonotum often bearing yellow stripes and the base of tergite 2 a pair of unconnected spots. I have seen it from British Guiana: Kartabo; source of Essequibo River. It is also known from Dutch Guiana, Brazil, Venezuela, Colombia, Peru, and Bolivia.

2. The var. *rotundata* Ducke (1910) was described (as a species) from French Guiana and is not known from elsewhere. It has few pale markings, no stripes on mesonotum nor spots at the base of tergite 2.

PROTOPOLYBIA RUFO-ORNATA (Cameron, 1912)

This was described, as *Charterginus rufo-ornatus*, from British Guiana, without more definite locality. It is at present unrecognized. No doubt it was a *Protopolybia*, possibly a color form of *P. picteti*.

PROTOPOLYBIA SULCISCUTIS (Cameron, 1912)

This also was described merely from "British Guiana," as *Polybia sulciscutis*, and is unrecognized. The statement in the description, "apex of postscutellum narrowed to a broad, bluntly rounded point," seems to place it in *Protopolybia*.

PROTOPOLYBIA NANA (Cameron, 1912)

This is another unrecognized species described by Cameron, as *Polybia nana*, from "British Guiana." The name conflicts with the

earlier *Polybia nana* H. de Saussure (1863); but, as Cameron's wasp is probably identical with some other described *Protopolybia*, it would be premature to rename it.

BRACHYGASTRA PÉRTY (1833)

This genus has been generally called *Nectarina* Swainson and Shuckard (1840); but there seems to be no reason why the earlier name *Brachygastera* should not be used.

Key to Guiana Species

1. Sides of propodeum compressed but not angular, forming evenly rounded curves in profile. Head (except clypeus), thorax and second abdominal tergite with deep, large punctures. Dorsal (horizontal) area of scutellum four times as wide as long in the middle. *B. scutellaris*
- Sides of propodeum compressed into prominent, broad, blunt angles. Second abdominal tergite with small punctures only. 2
2. Dorsal (horizontal) area of scutellum nearly flat, less than three times as wide as long in the middle, with the hind margin rather sharp but slightly or scarcely curved inward. Punctures of mesonotum fairly numerous and not or scarcely stronger than those of the base of second tergite. Clypeus about twice as wide as high. *B. lecheguana*
- Dorsal (horizontal) area of scutellum convex, three to four times as wide as long in the middle, with the hind margin blunt but deeply curved inward (scutellum forming two broad lobes). Punctures of mesonotum decidedly stronger than those of second tergite. . 3
3. Body with many erect, short hairs. Punctures of frons and mesonotum more numerous and fairly close. Lateral angles of propodeum higher. (Usually with many yellow markings). *B. bilineolata*
- Body with very few erect hairs. Punctures of frons and mesonotum far apart. Lateral angles of propodeum lower. (With few yellow markings, the thorax and head almost entirely black). *B. augusti*

BRACHYGASTRA AUGUSTI (de Saussure, 1854)

The typical form of the species has distinct yellow apical bands on tergites 1 to 6 and sternites 2 to 6 of the abdomen. It is known from

British Guiana (source of Essequibo River), Dutch Guiana, French Guiana, Brazil, Paraguay, Bolivia, Peru, Colombia, and Venezuela.

BRACHYGASTRA LECHEGUANA (Latreille, 1824)

This widely distributed and common wasp, known from southern Arizona and southern Texas to northern Argentina, was discussed in a paper published in *Entomologica Americana* in 1932 (13, pp. 92-112). The specimens from British Guiana (Arakaka), Dutch Guiana and French Guiana are of the var. *velutina* Spinola (1841), which has the thorax densely covered with silky, golden-yellow hairs.

BRACHYGASTRA SCUTELLARIS (Fabricius, 1804)

The several color forms of this species are revised in *Jr. New York Ent. Soc.*, 50, (1942) 1943, pp. 306-308, where I recognize six of them by name. The three known from the Guianas may be separated as follows:

1. Scutellum black; postscutellum either black or with an anterior pale cross-band. Abdomen with whitish apical margins on most sternites and some of the tergites var. *myersi*
 Scutellum and postscutellum mostly or entirely yellow 2
2. Second abdominal tergite mostly orange-yellow or ferruginous. Thorax with many yellow markings; mesonotum often with spots or stripes var. *rufiventris*
 Second abdominal tergite with only an apical yellow margin. Yellow of pronotum either lacking or restricted to the narrow, often incomplete humeral margin typical *scutellaris*

Typical *scutellaris* is the most common form in British Guiana: Forest Settlement, Mazaruni River; Kartabo; junction of Mazaruni and Essequibo Rivers. Ducke lists it from Bartica, and Bodkin from Issororo, N. W. District. It is also known from French Guiana, Brazil, Bolivia, eastern Peru, Colombia, and Panama. *Brachygastra scutellata* Spinola (1851) is a synonym of the typical form.

The var. *rufiventris* (de Saussure, 1854) is reported from French Guiana, Brazil and Colombia.

The var. *myersi* J. Bequaert (1943) was described from British Guiana (Mt. Roraima) and Bolivia.

BRACHYGASTRA BILINEOLATA (Spinola, 1841)

Recently (1943, Jr. New York Ent. Soc., 50, for 1942, pp. 303-306) I recognized five color forms of this species, those occurring in the Guianas being separated in the following key:

1. Second tergite with only the apical margin yellow. Mesonotum with short yellow longitudinal stripes or a pair of yellow spots posteriorly, or entirely black. Wings with a honey-yellow tinge, most of the veins testaceous typical *bilineolata*
 Second tergite with a broad or narrow discal yellow band in addition to the apical fascia, or mostly yellow. Mesonotum always with two yellow stripes 2
2. Second tergite mostly yellow, except for the black base and a more or less defined transverse black discal blotch or irregular line. Wings with a honey-yellow tinge var. *surinamensis*
 Second tergite with two separate transverse yellow stripes of about equal width, one apical, the other discal 3
3. Wings extensively tinged with honey-yellow. Veins and stigma mostly pale var. *antillarum*
 Wings nearly hyaline, slightly grayish, not suffused with yellow. Veins and stigma blackish var. *smithii*

Typical *bilineolata* is known from British Guiana (Demerara; Georgetown), French Guiana, Dutch Guiana, Venezuela, Brazil, Colombia, and Costa Rica. I regard *Nectarinia möbiana* de Saussure (1867) as a synonym of typical *B. bilineolata*.

The var. *antillarum* (Provancher, 1883) occurs in British Guiana: Rapununi River. I have seen it also from Dutch Guiana, Trinidad, Brazil, eastern Peru, and the Republic of Honduras.

The var. *smithii* (de Saussure, 1854) has been found in French Guiana, Dutch Guiana, Brazil, and Colombia.

The var. *surinamensis* J. Bequaert (1943) is known only from Dutch Guiana.

CHARTERGUS Lepeletier (1836)

As stated under *Parachartergus*, the type of this genus was designated by Emile Blanchard (1840) as *Vespa nidulans* Fabricius (1793), a synonym of *Vespa chartaria* Olivier (1791). I revised the genus in 1938 (Rev. de Entomologia, 9, pp. 113-115) under the erroneous name *Epipona*. I recognize two species, of which only one occurs in the Guianas.

CHARTERGUS CHARTARIUS (Olivier, 1791)

I have seen this wasp from British Guiana: Demerara; Georgetown. It occurs also in French Guiana, Dutch Guiana, Brazil, Paraguay, Bolivia, and Peru (Iquitos).

SYNOECA H. de Saussure (1852)

Ducke (1910) recognizes only two species of *Synoeca*, but I believe three may be separated on structural characters, as du Buysson did in his Monograph (1906). Moreover, *Polistes virginea* Fabricius appears to be the valid name for the species usually called *S. irina* (Spinola).

1. Larger; fore wing 16 to 18 mm. long. Eyes bare. Clypeus smooth and shiny. Propodeum either impunctate or with a few minute punctures. Oculo-malar space of worker and queen fully as long as sixth antennal segment. Mostly or wholly bluish-black; wings violaceous-black. *S. surinama*
Smaller; fore wing 13 to 15 mm. long. Eyes with a few short hairs. Clypeus rather dull and with scattered punctures. Propodeum densely punctate. Oculo-malar space of worker and queen shorter than sixth antennal segment. Either bluish-black or partly ferruginous. Wings mostly yellowish-subhyaline. 2
2. Thorax fairly uniformly punctate, the punctures of mesopleura and mesonotum scarcely smaller than those of propodeum. Scutellum convex, with very slight median impressed line. Swollen portion of first abdominal segment elongate-triangular seen from above. Black costal border sharply set off from the remainder of the wings. *S. chalybea*
Punctures of mesopleura and mesonotum very fine, much weaker than those of propodeum. Scutellum gibbose, with a deep median saddle. Swollen portion of first abdominal segment trapezoidal seen from above. Wings fairly uniformly yellowish-russet.
S. virginea

SYNOECA SURINAMA (Linnaeus, 1767)

A common wasp throughout Central and South America, from southern Mexico to southern Brazil. The size of the head varies considerably in this species and seems to be correlated with the total size of the specimen. Perhaps these differences set off the fertile females (queens) from the workers. Several other insects are homoeochromic

with *S. surinama*. The most interesting of these is the mantispid, *Climaciella chalybea* Erichson, of which I have seen a specimen from the Upper Rio Huallaga, Peru. The collector had evidently mistaken it for the wasp. Possibly the mantispid lives in the nest of *Synoeca*.

1. Typical form. Nearly entirely bluish-black, at most with russet blotches on the mandibles. This is *Vespa surinama* Linnaeus (1767), described from Surinam, where it is common. *Vespa nigricornis* Olivier (1791), *Polistes caerulea* Fabricius (1804) and *Synoeca ultramarina* H. de Saussure (1852) are synonyms.

Common in British Guiana: Arakaka; Penal Settlement, Bartica; Rockstone, Essequibo River; Kartabo; Georgetown; Kamakusa; Berbice Savannas; Blairmont. I have also seen it from Costa Rica, Colombia, Venezuela, Trinidad, French Guiana, Dutch Guiana, Brazil, Ecuador, Peru, and Bolivia.

2. Var. *cyanea* (Fabricius). The lower part of the head (particularly the clypeus) is more or less ferruginous-red; second abdominal tergite occasionally blotched with russet. Specimens transitional to typical *surinama* are frequent. This is *Vespa cyanea* Fabricius (1775), *Synoeca azurca* H. de Saussure (1852) and *Synoeca violacea* H. de Saussure (1852).

This form is more widely distributed than typical *surinama* and is known from French Guiana. I have seen it also from Mexico (Apatzingan, State of Michoacan), the Republic of Honduras, Guatemala, Costa Rica, Panama, Colombia, Brazil, Paraguay, Ecuador, and Venezuela.

SYNOECA VIRGINEA (Fabricius, 1804)

This species is rarer and not as widely distributed as *S. surinama*, being apparently restricted to the northern half of South America. It is almost entirely ferruginous or russet with very slight or no bluish sheen. Fabricius' description of *Polistes virginea* (1804) fits this wasp exactly. The statement "Antennae nigrae articulo secundo [=scape] longiore, testaceo", agrees with the *Synoeca*, not with *Apoica pallida*. Moreover, W. A. Schulz (1912, Berlin Ent. Zeitschr., 57, p. 84) recognized *Synoeca irina* in Fabricius' type. *Polistes irina* Spinola (1851) and *Synoeca testacea* H. de Saussure (1854) are synonyms.

British Guiana: Kartabo; Junction of Mazaruni and Essequibo Rivers; Penal Settlement, Bartica District; Source of Essequibo River. I have also seen it from Dutch Guiana, Brazil, Ecuador, and Peru.

SYNOECA CHALYBEA H. de Saussure (1852)

1. The typical form of this species, as figured by de Saussure (1854), is nearly entirely bluish-black, with or without violaceous reflections; mandibles, clypeus, oculo-malar spaces and spots on mesopleura and legs are yellowish-russet. The specific name was originally spelled *chalibea*, but later (1854) corrected to *chalybea* by the author himself.

British Guiana: Shudihar River. I have also seen it from Brazil and Peru and it was originally described from French Guiana.

2. *S. chalybea* var. *splendens* R. du Buysson (1906) was originally described as a form of *S. irina*; but all specimens I have seen have the puncturation of the thorax and the shape of the first abdominal segment as in *S. chalybea*. It is more or less extensively ferruginous or yellowish-russet. I have seen it from Bolivia and Peru. As Dr. Weyrauch collected both typical *chalybea* and var. *splendens* apparently from the same nest at Satipo, Peru, it is doubtful whether the name *splendens* deserves to be retained.

METAPOLYBIA DUCKE (1905)

I have reached the conclusion that there are two structural species in this genus, not one as Ducke claimed. They may be separated as follows:

1. First abdominal segment slightly widened apically seen from above and, in profile, very gradually thickened over posterior half. Ground color of abdomen reddish-brown *M. suffusa*
- First abdominal segment distinctly widened apically seen from above and, in profile, rather abruptly thickened over posterior third. Ground color of abdomen black *M. cingulata*

M. suffusa (Fox, 1899) has not yet been taken in the Guianas. According to Fox' types from Corumbá, Brazil, this is the wasp with the abdomen extensively russet which Ducke (1910) mentions from Bolivia and calls *Metapolybia pediculata* var. *rufopicta*. I have also seen it from Peru, Bolivia and Colombia. At Restrepo (Int. Meta), Colombia, I found *M. suffusa* and *cingulata* nesting side by side, but in distinct colonies. They were not in the least aggressive, although the sting was painful.

METAPOLYBIA CINGULATA (Fabricius, 1804)

Schulz (1912) saw the types of *Eumenes cingulata* Fabricius (1804) at Copenhagen and recognized in them *Polybia pediculata* H. de

Saussure (1854). The extent of pale yellow markings varies, Fabricius' *cingulata* being based upon specimens with only the first and second tergites margined with yellow. This is also true of Gribodo's *Tatua decorata* (1896); while *Polybia pediculata* var. *unilineata* R. v. Ihering (1904) refers to specimens with only traces of yellow markings. There is no name available, and none seems needed, for specimens with most or all tergites margined.

British Guiana: Kartabo; Bartica. Also known from Venezuela, Trinidad, Dutch Guiana, French Guiana, Brazil, Paraguay, northern Argentina, Bolivia, Peru, Colombia, Panama, Costa Rica, Guatemala, and Mexico (Cordoba, Vera Cruz; Tierra Colorada, Guerrero).

EPIPONA Latreille (1802)

Emile Blanchard in 1840 (Hist. Nat. Ins., 3, Orth. Névr. Hém. Hym. Lép. Dipt., p. 394) designated as type of *Epipona*, *Vespa morio* Fabricius (1798), a synonym of *Vespa tatua* Cuvier (1797). This generic name must therefore be used instead of *Tatua* de Saussure (1854); while the genus I called *Epipona* in 1938 should be known as *Chartergus* Lepeletier. *Epipona* was revised in 1938 (Rev. de Entomologia, 9, pp. 115-117), when I recognized two species, only one of which occurs in the Guianas.

Epipona tatua (Cuvier, 1797) has not yet been taken in British Guiana; but it is known from French Guiana, Trinidad, Venezuela, Brazil, Peru, Colombia, Panama, and Costa Rica.

POLYBIA Lepeletier (1836)

Key to Guiana Species

1. Propodeum with more or less distinct transverse striation extending even over the convex sides. Occipital margin of head with a deep inward curve. Body 14 to 16.5 mm. long. 2
- Propodeum without or with obsolete striation; rarely a few irregular striae in the concavity or on the sides. 4
2. Head very strongly swollen behind the eyes; outer orbit slightly wider than eye in profile. Clypeus broader than high, the apex evenly and broadly rounded off. Pronotum on the sides with a strong but blunt humeral crest. Striation of propodeum fine, but regular. *P. ujhelyii*
- Head moderately swollen behind the eyes; outer orbit narrower than eye in profile. Clypeus about as high as wide, with bluntly pointed apex. Pronotum somewhat shouldered, but not ridged

- at the humeral angles. Striation of propodeum very irregular or partly effaced. 3
3. Concavity and sides of propodeum with coarse and irregular wrinkles and punctures. First abdominal tergite slightly swollen; stalk-like base passing gradually into swollen apical portion (in profile view). *P. striata*
 Striation and punctures of propodeum weak or obsolete. First abdominal tergite strongly swollen, abruptly raised behind the stalk-like base (in profile view). *P. liliacea*
4. Median concavity of propodeum distinct and more or less circular, never longer than wide. 5
 Median concavity of propodeum either almost lacking or groove-like and longer than wide. 7
5. Head distinctly swollen; outer orbit fully as wide as eye in profile. Puncturation of mesopleura fine but distinct. Black, with scutellum and postscutellum entirely yellow. Body 12 to 14 mm. long. *P. jurinei*
 Head not swollen; outer orbit narrower than eye in profile. Mesopleura nearly impunctate. Smaller; body 8 to 10 mm. long. 6
6. Pronotum with very weak, blunt humeral collar; hind margin forming an oval curve. First abdominal segment slender; swollen portion longer than wide at apex. *P. signata*
 Pronotum with distinct, sharp humeral collar; hind margin nearly semi-circular. First abdominal segment shorter; swollen portion about as long as wide at apex. *P. bifasciata*
7. At least sides of thorax covered with dense, silky pubescence, often with golden sheen. Yellow markings lacking or much reduced. Body 14 to 19 mm. long. 8
 Thorax nowhere covered with dense, silky pubescence. 11
8. Eyes with distinct short hairs. Oculo-malar space very long (as long as fifth antennal segment). Pronotum without humeral collar. Black, with thorax more or less extensively and first or first and second abdominal segments reddish-brown. Body 15 to 17 mm. long. *P. sericea*
 Eyes bare. Oculo-malar space very short or lacking. 9
9. Dorsum of thorax densely covered with long golden-silky pubescence. Mesopleura finely but distinctly punctate. Pronotum without humeral collar. Mostly brownish-red to fuscous; abdomen without paler apical margins; head black; wings more or less ferruginous, particularly toward costal margin. Clypeus about as long as wide. Body 15 to 17 mm. long. *P. chrysothorax*

- Dorsum of thorax only sparsely pubescent, not golden-silky.
 Color different. 10
10. Only pleura of thorax distinctly silky; the abdomen not. Wings subhyaline or slightly brownish-yellow, with ferruginous costal margin. Body 15 to 16 mm. long. *P. affinis*
 Entire body, including abdomen, silky or velvety. Either russet to brownish-russet with testaceous apical abdominal margins, or (var. *velutina*) almost entirely blackish without apical margins. Wings strongly tinged with honey-yellow. Thorax very finely punctate. Pronotum without humeral collar. Clypeus slightly wider than long. Body 14 to 18 mm. long. *P. micans*
11. Large species, 18 to 21 mm. in total length. Head and thorax black; abdomen red; wings nearly hyaline. Thorax shiny, with scattered punctures and long, erect hairs. Oculo-malar space long. Clypeus much wider than long. *P. dimidiata*
 Smaller. Thorax not shiny, or the other characters mentioned above not all present. 12
12. First tergite distinctly punctate. Mesopleura and propodeum with large punctures. Outer orbits somewhat swollen in upper half. Clypeus slightly wider than high. Eyes with distinct short hairs. Body black, somewhat velvety, 12 to 14 mm. long; wings infusate, clearer posteriorly or apically. 13
 First tergite usually impunctate; if distinctly punctate, the other characters mentioned above not all present. 14
13. Oculo-malar space at its shortest over half the length of the tenth antennal segment. Concavity of propodeum narrow, groove-like, but very weak or barely indicated in upper third
P. tinctipennis
 Oculo-malar space at its shortest less than half the length of the tenth antennal segment. Concavity of propodeum well-developed over entire length, broader and more shallow. *P. rufitarsis*
14. Oculo-malar space distinct, at least half the length of the tenth antennal segment. 15
 Oculo-malar space very short or almost lacking. Clypeus always much narrower than vertex. Outer orbit usually narrower than eye in profile. 17
15. Black, with partly black wings. Eyes hairy. A short but distinct carina between occiput and middle part of outer orbit (not behind vortex). A fine, sharp humeral collar. Clypeus about as high as wide. *P. ignobilis*
 Russet, infusate or blackish, with many pale (yellowish) mark-

- ings, particularly on the thorax (mesonotum striped). Wings slightly tinged with yellow. No carina between occiput and outer orbit or vertex. No humeral collar. Eyes bare. Clypeus much wider than high. Outer orbit slightly wider than eye in profile. 16
16. Larger species; fore wing 11 to 11.5 mm. long. Oculo-malar space about as long as tenth antennal segment, longer than the stretch of the inner orbit contiguous to the clypeus. Clypeus somewhat narrower. *P. singularis*
 Smaller species; fore wing 8.5 to 9.5 mm. long. Oculo-malar space about half the length of the tenth antennal segment, shorter than the stretch of the inner orbit contiguous to the clypeus. Clypeus very wide. *P. emaciata*
17. Large species (15 to 18 mm. long); black with extensive pale markings; mesonotum always with two longitudinal pale stripes. Upper outer orbit separated from occiput by a strong carina, which however does not continue behind vertex. Propodeum with at least traces of striation. (*P. striata* and *P. liliacea*: see couplet 3)
 If pale longitudinal stripes are present on mesonotum, the species is much smaller. Propodeum without traces of striae. 18
18. Thorax shiny, with many distinct punctures. A distinct but short oculo-malar space. Eyes with scattered hairs. Longitudinal groove of propodeum deep. Russet, with yellowish markings and infusate areas. Wings nearly hyaline, very slightly yellowish. *P. gorytoides*
 Thorax practically impunctate. 19
19. Humeral margin of pronotum barely curved, raised on the sides into a sharp, low collar which projects as fairly distinct rounded angles. Groove of propodeum weak or obsolete; propodeum with erect hairs. No carina between occiput and vertex. Body 12 to 13 mm. long. *P. rejecta*
 Humeral margin of pronotum distinctly curved, either not raised or with a low collar which never forms angles at the sides. 20
20. Sides of pronotum with a distinct though low humeral collar. Upper outer orbits and vertex not separated by a carina from occiput. Propodeum distinctly grooved, with erect hairs. Body 9 to 12 mm. long. 21
 Humeral collar barely indicated or absent. In doubtful cases, with a fine carina between occiput and vertex. 22
21. Thorax slender, flattened dorsally, particularly on posterior por-

- tion of mesonotum and on scutellum. Scutellum not grooved.
 Eyes with fine, scattered hairs *P. procellosa*
 Thorax more thickset, not flattened dorsally; scutellum convex,
 with a longitudinal groove. Eyes bare *P. catillifex*
22. Upper outer orbits and vertex separated from occiput by a very
 fine carina, somewhat interrupted medially. Body 8 to 11 mm.
 long *P. occidentalis*
 Upper outer orbits and vertex not separated from occiput by a
 carina. Body 7 to 8.5 mm. long *P. bistrata*

Polybia lugubris H. de Saussure (1854) was originally described as from Guiana, but apparently by error. The species has only been taken definitely in southern Brazil and is unlikely to occur in the Guianas. It is not included in the foregoing key.

Polybia ujhelyii Ducke (1909) is known from the Lower Amazon (Brazil) and French Guiana. I have seen it from Bolivia.

Polybia signata Ducke (1910) is known from French Guiana, Brazil and Panama.

Polybia affinis R. du Buysson (1908) was described from French Guiana. Ducke records it also from Brazil and Ecuador. I do not know this species.

Polybia emaciata Lucas (1879). This is in my opinion the oldest valid, recognizable name for the well-known South American wasp which builds a nest of clay with a circular entrance. It is generally called *Polybia fasciata* H. de Saussure (1854), which was, however, a misidentification of *Polybia fasciata* Lepeletier (1836). Lepeletier's *fasciata* was certainly not the *Polybia* with the clay nest, the size given being much too large (7 French lines = 15 mm.). I regard *P. fasciata* Lepeletier, *Vespa fasciata* Olivier (1791) and *Vespa fulvo-fasciata* Degeer (1773) as one and the same species of *Stelopolybia*. *Polybia caementaria* Ducke (1904) is a synonym of *P. emaciata*. The species is known from Dutch Guiana, French Guiana, Venezuela, Colombia, Brazil, Peru, Bolivia, Panama, Costa Rica, Guatemala and the Republic of Honduras.

POLYBIA GORYTOIDES FOX (1898)

British Guiana: west bank of the Demerara River; Bartica. Also known from Brazil (Oyapoc; Amazon Basin; Chapada), Dutch Guiana (Kwakoe Gron, Saramacca River), Bolivia (Buena Vista, Dept. Sta. Cruz) and Colombia (Villavicencio, Int. del Meta).

POLYBIA LILIACEA (Fabricius, 1804)

P. liliacca and *P. striata* (Fabricius) (Syn.: *P. syncophanta* Gribodo) are closely allied species, with the same type of coloration, namely black, with extensive pale markings on thorax and abdomen and particularly with two broad longitudinal pale stripes on mesonotum. These two species are structurally distinct and, as Dr. C. Geijskes writes me, differ in the nesting habits.

In *P. liliacca* the striation and puncturation of the propodeum are weak or obsolete, the concavity showing only faint traces of striae. The postscutellum is rather strongly swollen. The first abdominal tergite is short and much swollen, the swelling being rather abrupt in profile, the basal stalk-like portion well-defined and at most one-third of the total length of the tergite. Usually the color markings are very pale yellow or ivory-yellow, the longitudinal stripes of the mesonotum often coalescent before the scutellum; all or most of the abdominal segments bear apical bands. This type of coloration was correctly described by Fabricius as follows: "Caput cum antennis nigrum. Thorax ater limbo lineolisque duabus crassis, antice abbreviatis, postice coeuntibus, scutello lineolisque duabus sub scutello flavis. Abdomen nigrum segmentorum marginibus flavis. Pedes nigri."

According to Dr. Geijskes, the nest of *P. liliacca* is very long (1.5 m.) and sausage-shaped, truncate at the lower end. It was partly described by de Saussure (1858, Et. Fam. Vesp., 2, pp. cx-cxi) and H. Lucas (1867).

British Guiana: Warina; Oronoque River; Georgetown; Berbice Savannahs; west bank of Demerara River; Kartabo; Bartica; source of Essequibo River. It is known also from French Guiana, Dutch Guiana, Brazil, Venezuela, Colombia, Peru, Bolivia, and Ecuador.

POLYBIA STRIATA (Fabricius, 1787)

Polybia syncophanta Gribodo (1891) I regard as a synonym of Fabricius' *Vespa striata*. Those who, like Ducke, refuse to recognize this wasp in Fabricius' description, will have to use Gribodo's name.

In *P. striata*, the puncturation of the propodeum is coarse and the striation is distinct though irregular and particularly well developed in the concavity. The postscutellum is moderately swollen. The first abdominal tergite is elongate and gradually widened, being slightly swollen in profile, with the basal stalk at least one-third of the total length and poorly defined. Usually the color markings are darker

yellow, often with an orange tinge and the stripes of the mesonotum may be free throughout. The apical fasciae of the abdomen are either as in *liliacca*, or much reduced, sometimes almost lacking. Fabricius evidently described one of these very dark specimens: "Caput, abdomen, pedes nigra, immaculata. Thorax niger margine antico tenuissime, lineis duabus dorsalibus, lateribus baseos obliquis, scutello maculisque sub scutello flavis. Alae albae costa fusca." It should be noted that some specimens with the structural characters of *striata* are colored exactly like *liliacca*, so that the color is not a reliable character. On the other hand, I have seen no specimens of *liliacca* either with the abdomen almost black or with orange-yellow markings.

The species is as common and as widely distributed as *P. liliacca*. I have seen it from British Guiana: Kartabo; Warina. Also from Dutch Guiana, Trinidad, Brazil, Colombia, Bolivia and Peru. It was first described from French Guiana.

According to Dr. Geijskes, the nest of *P. striata* is a white spherical structure hung up high in a tree. It is of interest that the Indians in the interior of Dutch Guiana distinguish *P. striata* and *P. liliacca* by name. The nest of *P. striata* has not yet been described.

Ducke (1910) includes *P. striata* and *P. liliacca* in his key among the species without striation on the propodeum. As the striation is fairly distinct, at any rate in *P. striata*. I have inserted these species twice in my key.

POLYBIA JURINEI H. de Saussure (1854)

A widely distributed species, which I have seen from British Guiana: Kartabo. It is also known from French Guiana, Dutch Guiana, Brazil, Bolivia, Peru, Ecuador and Colombia (Restrepo, Int. Meta)

POLYBIA BIFASCIATA H. de Saussure (1854)

This species, which extends from Mexico to southern Brazil, is rather variable in color. In a recent paper (1943, Jl. New York Ent. Soc., 50, for 1942, pp. 300-303), I recognize seven forms by name. Only two of these have been taken in the Guianas thus far. Typical *P. bifasciata* I have seen from British Guiana (Kartabo; Demerara River), as well as from eastern Peru. The var. *quadricincta* H. de Saussure (1854) is the most common form of the species. It occurs in British Guiana: Bartica; Kartabo; source of Essequibo River; Warina, N. W. District. I have also seen it from French Guiana, Trinidad, Venezuela, Colombia, Peru and Bolivia.

POLYBIA SERICEA (Olivier 1791)

Olivier's typical form has the head black, the thorax and first segment of the abdomen fulvous, and the remainder of the abdomen blackish. This is a common wasp throughout most of Central and South America, from Guatemala to Buenos Aires. It was originally described from French Guiana. It occurs in British Guiana (Upper Rupununi River) and I have seen it from Dutch Guiana (Paramaribo). *Rhopalidia rufithorax* Lepeletier (1836), *Apoica cubitalis* H. de Saussure (1854) and *Polybia melanocephala* Cameron (1906) were based upon typical *P. sericea*.

Most specimens I have seen from British Guiana (Demerara; Onverwagt; Georgetown; Mt. Roraima; Bartica District) belong to the form of the species with both first and second abdominal segments fulvous. This is *Polistes nigripennis* Fabricius (1804) and, if a name is needed for it, may be called *P. sericea* var. *nigripennis* (Fabricius). I have also seen it from Venezuela.

POLYBIA CHRYSOTHORAX (Weber, 1801)

Polistes aurulenta Fabricius (1804) and *Polybia aurichalcea* H. de Saussure (1854) are synonyms.

Common in British Guiana: Kartabo; Kalacoon; Demerara; Bartica District; Georgetown; Forest Settlement, Mazaruni River. I have also seen it from Dutch Guiana, Colombia, Brazil, Venezuela and Panama.

POLYBIA MICANS Ducke (1904)

1. Typical *P. micans* is russet to brownish-russet with more testaceous areas, particularly at the apical margins of the abdominal segments and the base of the second tergite. The tegulae and legs are russet-testaceous, the wings strongly tinged with russet. In British Guiana it was taken at Kartabo and Bartica. I have also seen it from French Guiana, Dutch Guiana, Brazil, Bolivia, and Ecuador. It appears to be somewhat nocturnal and occasionally flies to light. *Polybia sericeibalteata* Cameron (1906) I regard as a synonym of typical *micans*.

2. *P. micans* var. *velutina* Ducke, was described by Ducke (1907) as a distinct species, but I am unable to separate it by structural characters from *P. micans*. It is fairly uniformly brownish-black, the tegulae and legs being also of that color. There are a few testaceous blotches on the head. The wings are more yellowish than russet. This form is

rather rare in British Guiana: Arakaka. It is known also from Brazil, Bolivia, Peru, Ecuador and Colombia.

POLYBIA DIMIDIATA (Olivier, 1791)

British Guiana: West bank of Demerara River; Oronoque River, 2°42'; Penal Settlement, Bartica District. I have also seen it from Brazil, Dutch Guiana, French Guiana, Bolivia, Peru and Colombia.

The large syrphid fly, *Ceriodes braueri* Williston, is perfectly homeo-chromic with this wasp.

POLYBIA REJECTA (Fabricius, 1798)

I recognize three color forms of this common and widely distributed wasp, but transitional specimens are frequent.

1. Typical *P. rejecta* has the head, thorax, and first abdominal segment black, with very few pale yellow markings (hind margin of postscutellum and narrow apical margin of first tergite); the remainder of the abdomen dull brick-red, with or without narrow, pale margins (sometimes ventrally only). Sometimes the red turns fuscous or blackish. Common in British Guiana: Mt. Everard; Arakaka; Amatuk; source of Essequibo River; Tumatumari, Potaro River; west bank of Demerara River. Kartabo; Bartica; Rupununi; Penal Settlement, Bartica District; Moraballi Creek, Essequibo River. I have also seen it from Dutch Guiana, French Guiana, Trinidad, Venezuela, Brazil and Peru. *Polybia bicolor* F. Smith (1857) and *Eumenes impunctus* Provancher (1888) are synonyms.

Polybia rejecta race *javaryensis* Cameron (1906) is a species of *Mischocyttarus*.

2. Var. *belizensis* Cameron (1906). Entire body black, the pale markings of the thorax as in the typical form; abdomen dorsally with a narrow apical margin on first segment only. This is the common form in Central America, where I have seen it from British Honduras, Guatemala, the Republic of Honduras, Costa Rica, and Panama; but it occurs also in Colombia, Brazil and Peru.

3. Var. *litoralis* Zavattari (1905). Like var. *belizensis*, but all or most of the abdominal tergites with rather broad pale apical margins. Described from Ecuador. I have seen it from Colombia, where it is common; but Ducke's locality "Bogota" is due to an erroneous label, as no member of the subfamily Polybiinae occurs in the vicinity of that city.

POLYBIA OCCIDENTALIS (Olivier, 1791)

The most common social wasp of tropical America, from Mexico (northward to Nuevo Leon and Tamaulipas) to northern Argentina and Uruguay. In the Antilles proper it is known only from St. Vincent and Grenada. It is exceedingly variable in size, color and even the shape of the first abdominal segment, but all of the forms intergrade. The following seem to be sufficiently distinct to deserve names.

1. Typical *P. occidentalis* is black, with few or many, reduced or more extensive pale yellow or whitish markings, fairly evenly distributed over head, thorax and abdomen; most or all of the abdominal tergites have pale apical margins; mesonotum usually unstriped. *Vespa pygmaea* Fabricius (1793), *Polybia pygmaea* var. *minor* Moebius (1856), *P. pygmaea* var. *major* Moebius (1857), *P. albo-picta* F. Smith (1857), *P. bohemani* Holmgren (1868) and *Eumenes cinctus* Provancher (1888) were based on some of the variants which I include under typical *occidentalis*. If desired, small specimens, with more slender first tergite and few white markings, might be called var. *pygmaea* (Fabricius).

This form extends over practically the entire range of the species and is common in the Guianas. British Guiana: Kartabo; Bartica District; Demerara; Oko River (tributary of Cuyuni River); Upper Rupununi.

Polybia fastidiosuscula var. *nigriceps* Zavattari (1906) appears to be based upon specimens of *P. occidentalis* much like the typical form, but with the head entirely black and traces of pale longitudinal stripes on the mesonotum. I have seen such specimens occasionally from colonies of otherwise typical *occidentalis* and cannot regard them as more than individual variants.

Myraptera elegans Curtis (1844) was somewhat more extensively bright yellow, particularly on the head, and had two yellow lines on the mesonotum. It is doubtful whether it should be given varietal status. It is clearly transitional to var. *flavifrons*.

2. *P. occidentalis* var. *flavifrons* F. Smith (1857) has the head almost entirely yellow (usually with an orange tinge) and is also extensively yellow on thorax and abdomen. In particular the mesonotum bears two broad longitudinal stripes, often fused before the scutellum. *Polybia saussurei* Holmgren (1868) is not separable, according to the types I saw in Stockholm. This form is homeochromic with the darker specimens of *P. bistriata* (Fabricius) (= *occodoma* de Saussure); but the structural characters given in the key readily separate the two species.

I have seen the var. *flavifrons* from Ecuador (Guayaquil), Peru (Trujillo) and Brazil (Coary, Amazonas; Lassance, Minas Geraes; Tres Lagoas, Matto Grosso; etc.).

3. Var. *parrula* (Fabricius, 1804) was originally described as almost wholly black, with only a narrow pale apical margin on the first abdominal segment. Many transitions connect this form with typical *occidentalis*. I am unable to separate from it *P. occidentalis* var. *digueta* R. du Buysson (1905).

The var. *parrula* often occurs in the same districts as the typical form, but is relatively rare in British Guiana: Demerara; Kartabo; Kaieteur, Arakaka. I have also seen it from Mexico, Guatemala, Costa Rica, Panama, Colombia, Venezuela, French Guiana, Dutch Guiana, and Brazil.

4. Var. *jurua* R. v. Ihering (1904) is remarkable for the extension of the yellow markings on the abdomen, the second tergite being mostly of that color. The mesonotum, however, has no yellow stripes. I have seen it from Brazil (Puerto America, Rio Putumayo), Bolivia, Peru, and Venezuela; it was described from the Jurua River, Brazil.

Specimens from Aquidauana (Matto Grosso), Brazil, in which the apical yellow margin of tergite 2 is considerably widened on the sides, but narrow in the middle, connect var. *jurua* with typical *occidentalis*.

5. Var. *scutellaris* (White, 1841) differs from typical *occidentalis* only in the yellow being restricted to scutellum and postscutellum, which are partly or wholly of that color.

I have seen it from Brazil (Bahia; São Paulo), Paraguay (Villarrica), northern Argentina (Entre Rios) and Uruguay (Montevideo).

6. Var. *sylonota* Cameron (1904) has not only the scutellum and postscutellum mostly dark yellow, often with an orange tinge, but also a large orange-yellow spot (sometimes divided) on the propodeum, as well as other markings on head, thorax and abdomen; often, but not always, the mesonotum bears a prescutellar spot, divided anteriorly into two prongs; the markings of the head are rather small.

It appears to be common in Nicaragua (San Marcos, topotypes taken with the holotype, but probably not seen by Cameron; Managua; Chinandega; Granada). I have also seen many specimens from Mexico, Costa Rica and Panama which provide all transitions between typical *occidentalis* and var. *sylonota*, sometimes apparently in the same nest.

7. Var. *ruficeps* Schrottky (1902) is very distinct, the head being entirely or mostly brick-red to dull red, with or without yellow mark-

ings. The remainder of the body is much marked with yellow, but without mesonotal stripes and with the apical margins of the tergites complete, narrowed or interrupted medially.

It is common in northern Argentina, but occurs also in southern Brazil (Corumbá, Matto Grosso), Paraguay, and Bolivia (Buena Vista de Sta. Cruz).

POLYBIA PROCELLOSA Zavattari (1906)

Typical *procellosa*, known from Ecuador only, is mostly ferruginous-brown, variegated with black and yellowish markings, the legs yellowish-russet, the wings gray with yellowish tinge.

The var. *dubitata* Ducke (1910) is black with a few whitish markings, the legs black, the wings grayish without yellowish tinge. It was originally described from the Amazon Basin in Brazil; but I have seen it from British Guiana (Kurupung) and Peru.

POLYBIA BISTRIATA (Fabricius, 1804)

The species generally called *Polybia oecodoma* H. de Saussure (1854), is *Polistes bistrinata* Fabricius (1804), according to Fabricius' types. I regard it as structurally distinct, not as a color variety of *Polybia occidentalis*. The characters given in my key show that it is more closely related to *P. catillifex*. Cameron's *Polybia brunneiceps* (1912), described from British Guiana, without more definite locality, appears to be a synonym of *P. bistrinata*. The ground color varies from blackish-brown to pale russet.

P. bistrinata is common in British Guiana: Kartabo; Moraballi Creek, Essequibo River; Rockstone, Essequibo River; Demerara; Warina, N. W. District; Kalacoon; Mt. Roraima; Penal Settlement, Bartica District. I have also seen it from Brazil, Dutch Guiana, Venezuela, Ecuador, Peru, and Colombia.

POLYBIA CATILLIFEX Moebius (1856)

British Guiana: Turesi Falls; Kamakusa; Bartica; Pakaraimo Mts., head of Mazaruni River. Also known from Dutch Guiana, Brazil, Ecuador, Colombia, and Peru.

POLYBIA SINGULARIS Ducke (1909)

British Guiana: Bartica District; source of Essequibo River. Known also from the Amazon Basin in Brazil, Colombia (Mapiri) and eastern Peru.

As shown in the key, this is closely allied to *P. emaciata*. It builds a similar nest of clay, but with a long, narrow, slit-like (not a circular) entrance. Such nests were described by F. Smith (1851) and H. Lukas (1890), but without knowledge of the builder, which was first recognized by Ducke (1905; erroneously referred to *P. emaciata*).

POLYBIA TINCTIPENNIS Fox (1898)

The typical color form of this species is known from southern Brazil, eastern Peru, Honduras and Panama. In British Guiana (Kamakusa; Kartabo; source of Essequibo River) it is replaced by the var. *nebulosa* J. Bequaert (1943), with uniformly infuscated wings. This form occurs in Trinidad and probably also in the Amazon Basin of Brazil.

POLYBIA RUFITARSIS Ducke (1904)

I have seen the typical form of this species from British Guiana: Moraballi Creek, Essequibo River. It is also known from Brazil.

POLYBIA IGNOBILIS (Haliday, 1836)

The involved synonymy of this common South American wasp will be discussed elsewhere. *Polybia atra* de Saussure (1854; not *Vespa atra* Olivier, 1791) and *Polybia nigra* de Saussure (1858) are synonyms.

I have seen a few specimens from British Guiana: Mt. Roraima. It is known definitely also from Panama, Colombia, Venezuela, Brazil, Paraguay, Bolivia, Peru and Argentina.

APOICA Lepeletier (1836)

There is only one structural species of *Apoica*, extremely variable in color.

APOICA PALLIDA (Olivier, 1791)

A. pallida is a nocturnal wasp, frequently attracted by light. I have recently examined several thousands of these wasps. The conclusions reached, as to color variation and distribution, will be embodied in a paper to be published elsewhere. I am able to distinguish by name five color forms, all of which occur in the Guianas. Although each form is somewhat variable, there are few truly transitional specimens. The females may be separated by means of the following key.

1. Body testaceous, pale fulvous, or darker brown, either uniformly so or with part to most of the abdomen paler than head and thorax. No or very few pale yellow markings (none on head and mesonotum). Wings more or less infuscated, often blackish.
 var. *thoracica*
 Body testaceous to pale fulvous, with many yellowish markings or extensively whitish or yellow 2
2. Abdomen (except base of tergite 1) dorsally pale yellow or nearly white, often with silvery pubescence ("frosty"); venter either yellow or pale yellow or fulvous. Head and thorax pale fulvous or testaceous, usually spotted with yellow. Wings subhyaline, brownish-russet along the costa var. *pallens*
 Dorsum of abdomen not mostly pale yellow nor silvery 3
3. All abdominal tergites with a pale yellow, narrow or wide, apical margin; sixth tergite entirely yellow. Head and thorax spotted with yellow (mesonotum often with two or four yellow stripes). Wings subhyaline, slightly pale russet along the costa.
 var. *arborea*
 Abdominal tergites not all margined with pale yellow 4
4. Abdomen pale fulvous (except first tergite), with apex of first tergite and broad base of second tergite pale yellow. Head and thorax blackish without yellow spots (not stripes on mesonotum). Wings strongly infuscated, nearly violaceous-black. var. *albimaculata*
 Pale fulvous to darker brown. Sometimes with apex of first tergite spotted with yellow; sixth tergite as a rule mostly yellow. Head and thorax with many pale yellow spots. Mesonotum with longitudinal stripes (at least traces). Wings slightly russet, darker along costa. typical *pallida*

1. Typical *A. pallida*. — Syn.: *Vesta pallida* Olivier, 1791; *Apoica lineolata* Lepeletier, 1836; *Polistes translucida* Spinola, 1851; *Apoica bilineolata* "Lepeletier" H. de Saussure, 1854; *Apoica lineata* "Lepeletier" R. du Buysson, 1906.

A common form in British Guiana: Rockstone, Essequibo River; Mackenzie, Demerara River; Bartica; Kartabo; Upper Rupununi River; Demerara River; Tumatumari, Potaro River; Torani Ranch, Berbice River; Shudihar River; Wismar; Penal Settlement, Mazaruni River; Kamakusa. Also known from British Honduras, Trinidad, Dutch Guiana, Brazil, Ecuador and Peru.

2. *A. pallida* var. *thoracica* R. du Buysson, 1906.

This form is probably as common as typical *pallida*. British Guiana: Mackenzie, Demerara River; Tumatumari, Potaro River; source of Essequibo River; Kuyuwini River; Shudihar River. It is known also from Costa Rica, Panama, Colombia, Venezuela, French Guiana, Dutch Guiana, Brazil, Bolivia and Peru.

3. *A. pallida* var. *pallens* (Fabricius). — Syn.: *Polistes pallens* Fabricius, 1804; *Apoica pallida* Lepageletier, 1836.

Very common in British Guiana: Kamakusa; Shudihar River; Oronoque River, 2° 42'; Kartabo; Tumatumari, Potaro River; Kuyuwini River; Georgetown; source of Essequibo River. I have seen it also from British Honduras, Guatemala, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Trinidad, Dutch Guiana, French Guiana, Brazil, Paraguay, Bolivia, Peru and Ecuador. It is reported from southern Mexico.

4. *A. pallida* var. *arborca* H. de Saussure. — Syn.: *Apoica arborca* H. de Saussure, 1854.

British Guiana: Kartabo; Torani Ranch, Berbice River; Shudihar River; Tumatumari, Potaro River; Mazaruni River. Also known from Dutch Guiana, French Guiana, Brazil, Bolivia, eastern Peru and Ecuador.

5. *A. pallida* var. *albimacula* (Fabricius). — Syn.: *Polistes albimacula* Fabricius, 1804; *Polistes albimaculata* "Fabricius" H. de Saussure, 1854.

A rare form known only from Dutch Guiana and British Guiana: Shudihar River; Kartabo; Pakaraimo Mts. at the headwaters of the Mazaruni River.

STELOPOLYBIA Ducke (1910)

(Including *Gymnopolybia* Ducke, 1914)

Ducke (1914, Zool. Lahrh., Abt. Syst., 36, pp. 317 and 327) divided his genus *Stelopolybia* into two groups, restricting the earlier name to the species which build nests in the open, but with the combs enclosed in a paper envelope. The species building uncovered combs inside some natural cavity, he separated as *Gymnopolybia*. Although he mentioned some structural differences between these two biological groups, he could find none that divided the species either consistently or naturally.

Polistes angulata Fabricius (1804) was selected as the type of *Stelopolybia* by R. Lucas (1912, Arch. f. Naturgesch., 77, Bd. 4, Heft 1,

p. 210).¹ Unfortunately this is one of the species with uncovered combs which Ducke later placed in *Gymnopolybia*. O. W. Richards (1943, Proc. Ent. Soc. London, ser. B, 12, pts. 3-4, p. 45) has now chosen *Polybia vulgaris* Ducke (1904), which I regard as a synonym of *Vespa fulvofasciata* Degeer (1773), as the type of *Gymnopolybia*. This is also one of the species with uncovered combs. It thus appears that the designated genotypes of *Stelopolybia* and *Gymnopolybia* are strictly congeneric, making the two names synonyms and leaving the group of species building combs inside a paper envelope without a distinct name. I feel, however, that the distinction between the two groups is purely biological. The morphological differences assigned to them by Ducke and Richards are either inadequate, showing transitions or not applying to all the species of each group, or else of very secondary importance in the general classification of the Polybiinae. For this reason I do not propose a new name for the species which build combs within an envelope.

H. de Saussure (1854) divided his subgenus *Polybia*, s. str. into a number of divisions: *Alpha*, *Iota*, *Phi*, *Mu*, *Kappa* and *Omega*. According to F. J. Griffin (1939, Jl. Soc. Bibl. Nat. Hist., 1, pp. 211-212), these were all published the same year (1854) and antedate de Saussure's use of some of them for groups of solitary wasps. Only *Phi* and *Mu* contained species now placed in *Stelopolybia*, in addition to others. In view of the divergence of opinion regarding the use of Greek letters spelled out as generic or subgeneric names, I select types which will make them synonyms of older names. *Phi* originally contained 10 species, 8 of which are now placed in *Stelopolybia* and one in *Mischocyttarus*, one being unrecognized though probably also a *Stelopolybia*. I herewith designate as type *Vespa phthisica* Fabricius (1793), now placed in *Mischocyttarus* subgenus *Kappa* de Saussure (1854) (see O. W. Richards, 1941, Proc. Ent. Soc. London, B, 10, pp. 125-126). *Mu* comprised 11 species, 6 now placed in *Polybia*, 2 in *Stelopolybia* and 3 in *Mischocyttarus*. I herewith designate as type *Myrapetra scutellaris* White (1841), now placed in *Polybia* and which is, moreover, the monotype of *Myrapetra* White (1841).

¹R. Lucas' earlier selection of *P. angulata* invalidates O. W. Richards' recent (1943) choice of *Polybia infernalis* de Saussure as the type of *Stelopolybia*.

Key to Guiana Species

1. Dorsal area of pronotum rounded off, at most with a trace of humeral collar 2
 Pronotum with a raised humeral collar, sometimes projecting as lateral angles. Oculo-malar space long 5
2. Small species, 10 to 12 mm. long. Eyes with rather distinct short hairs 3
 Large species, 15 to 20 mm. long. Eyes scarcely hairy. Oculo-malar space short, but distinct 4
3. Oculo-malar space very long (about as long as ninth antennal segment). Upper plate of mesepisternum longer than high
S. cajennensis
 Oculo-malar space very short (eye almost touching mandibular condyle). Upper plate of mesepisternum nearly as long as high
S. pallens
4. Clypeus with distinct, fairly large punctures. Anterior margin of pronotum moderately raised near the coxae. Lower outer orbit nearly as wide as eye in profile. Larger, wing 15 to 16 mm. long
S. paraensis
 Clypeus with fine punctures. Anterior margin of pronotum strongly raised into a translucent lamella near the coxae. Lower outer orbit narrower than eye in profile. Smaller, wing 13 to 14 mm. long *S. obidensis*
5. Sides of humeral collar strongly projecting and angular. Eyes distinctly hairy 6
 Sides of humeral collar rounded off, not or scarcely projecting. Eyes with a few sparse hairs 8
6. First abdominal segment slender, longer than the combined propodeum and postscutellum. Wing 14 to 15 mm. long, slightly yellowish *S. constructrix*
 First abdominal segment scarcely longer than the propodeum . . . 7
7. Body orange-yellow with russet areas, the hind half of abdomen black; second tergite with yellow base and apical margin. Wings strongly russet-yellow, 17 to 18 mm. long *S. testacea*
 Body black rarely with a few yellow markings. Wings subhyaline, with a yellowish tinge, about 16 mm. long *S. angulata*
8. Larger; wing about 14 mm. long. First abdominal segment rather abruptly widened and bell-shaped, slightly angular at the sides seen from above. Second tergite rather suddenly widened behind the base *S. fulvo-fasciata*

Smaller; wing 9 to 11 mm. long. First abdominal segment very gradually widened, not bell-shaped. Second tergite gradually behind the base *S. pallipes*

STELOPOLYBIA CAJENNENSIS (Fabricius, 1798)

Polybia lignicola Ducke (1904) is a synonym.

A common species in British Guiana: Bartica; Kamakusa, Warina, N. W. District; Kartabo; Forest Settlement, Mazaruni River. Also known from Dutch Guiana (Saint Barbara Plain, Surinam River; Paramaribo), French Guiana, Trinidad, Brazil, Colombia, Peru, Ecuador, Panama, and the Republic of Honduras.

STELOPOLYBIA PALLENS (Lepeletier, 1836)

The type of *Rhopalidia pallens* Lepeletier is now in Spinola's collection at the Turin Museum, where it was recognized by Ducke as identical with *Polybia infernalis* de Saussure (1854). Lepeletier's name is valid; he described his *R. pallens* as a new species, without any reference to *Polistes pallens* Fabricius (1804), which is not placed now in *Stelopolybia*. Other synonyms are: *Polistes rufina* "Illiger" Erichson (1848), *Polybia ampullaria* Moebius (1856); *Eumenes flavopectus* Provancher (1888); and *Polybia internalis* Dalla Torre (1904).

Common in British Guiana: Bartica; Kamakusa; Kaieteur; Turesi Falls; Kartabo; Baracara, Mazaruni River; Demerara; Moraballi Creek, Essequibo River; Courantyne River; source of Essequibo River; Forest Settlement, Mazaruni River; west bank of Demerara River. Also known from French Guiana, Trinidad, Brazil, Bolivia, Peru, and Ecuador.

STELOPOLYBIA PARAENSIS (Spinola, 1851)

This species occurs in three color forms.

1. Typical *S. paraensis* is extensively orange-yellow or pale ferruginous ventrally, blackish-brown or black dorsally with many pale yellow markings, forming longitudinal stripes on the mesonotum and apical fasciae on most of the tergites; base of first and second tergites also yellowish; antennae and legs orange-russet; tegulae yellowish; wings strongly tinged with yellow. Not rare in British Guiana: Mt. Roraima Kalacoon; Pakaraimo Mts., head of Mazaruni River; Shudihar River. Also known from Brazil, Peru, and Bolivia. Homeochromic with *S. obidensis*.

2. *S. paraensis* var. *ruficornis* Ducke (1905). Mostly black; antennae russet (scape darker); spots on sides of frons, outer orbits, hind margin of pronotum, tegulae, longitudinal streaks on propodeum, tibiae, tarsi, apical margins of some of the tergites and sternites, more or less testaceous or whitish; no stripes on mesonotum. Wings as in typical form. Originally described from the Upper Amazon, Brazil (Japura River; Tabatinga). I have seen it from Peru (Iquitos; Rio Tapiche). Ducke also reports it from eastern Ecuador.

Ducke records specimens from Chiriqui, Panama, transitional between typical *paraensis* and *ruficornis*. I have seen such a specimen from Pozuzo, Peru. It has the legs mostly yellowish and two narrow yellowish lines on the mesonotum; otherwise it is like *ruficornis*.

3. *S. paraensis* var. (or subsp.) *obscurior*, new.

Female.—Body black; only the flagellum (particularly below) and fore tibiae and tarsi somewhat russet; lower inner orbital margins orange or dirty yellow, filling the ocular sinuses. Tegulae black. Wings as in typical form.

ECUADOR: Jatun Yucu, Rio Napo Watershed, 700 m., holotype and paratypes (W. Clarke-Macintyre). — COLOMBIA: Restrepo, Int. Meta, 500 m., paratype (J. Bequaert). — BRITISH GUIANA: Mt. Roraima, paratype (J. G. Myers); source of Essequibo River, paratypes (J. Ogilvie). — DUTCH GUIANA: Brownsberg, paratypes (D. C. Geijskes). — Holotype and paratypes at Mus. Comp. Zoöl., Cambridge, Mass.; paratypes at U. S. Nat. Mus. and Amer. Mus. Nat. Hist.

Perfectly homeochromic with *S. angulata*, but without the humeral angles of that species.

STELOPOLYBIA OBIDENSIS (Ducke, 1904)

Polybia paraensis var. *luctuosa* W. A. Schulz (1905) is a synonym.

British Guiana: Tumatumari; Pakaraimo Mts., head of Mazaruni River; source of Essequibo River; Kamakusa; Tukeit; Forest Settlement, Mazaruni River; Turesi Falls; Kartabo; Bartica; Moraballi Creek, Essequibo River; Penal Settlement, Bartica District. I have seen it also from Dutch Guiana and it is known from Brazil.

STELOPOLYBIA CONSTRUCTRIX (de Saussure, 1854)

British Guiana: Pakaraimo Mts., head of Mazaruni River; Kamakusa; Kartabo; source of Essequibo River. Also in French Guiana and Brazil.

STELOPOLYBIA TESTACEA (Fabricius, 1804)

Common in British Guiana: Kartabo; west bank of Demerara River; Mackenzie, Demerara River; Bartica; Pakaraimo Mts., head of Mazaruni River; Kuyuwini River; Oko River, a tributary of the Cuyuni River; Mt. Roraima. Also seen from French Guiana, Dutch Guiana, Brazil, Venezuela, Bolivia and Peru.

STELOPOLYBIA ANGULATA (Fabricius, 1804)

The typical form of this species, without yellow markings and with black tarsi, occurs in British Guiana: Kaieteur; Bartica; Kamakusa; Arakaka; west bank of Demerara River; Warina, N. W. District; Pakaraimo Mts., head of Mazaruni River; Mt. Roraima. I have seen it also from Venezuela, Dutch Guiana, Brazil, Ecuador, Peru and Bolivia. In Guatemala, Costa Rica, Panama and parts of Colombia it is replaced by a closely allied species, *S. panamensis* (Cameron), in which the humeral angles are much less prominent.

S. angulata var. *angulicollis* (Spinola, 1851) has the tips of the femora and the entire tibiae and tarsi yellowish; while the var. *ornata* (Ducke, 1905) has, in addition, some pale yellow spots on the thorax. Neither of these is known from the Guianas.

STELOPOLYBIA FULVO-FASCIATA (Degeer, 1773)

I regard *Polistes hectica* Fabricius (1804) and *Polybia vulgaris* Ducke (1904) as synonyms. *Vespa ochrosticta* Weber (1801) may also have been the same. *Vespa fasciata* Olivier (1791) appears to be merely a new name proposed for *Vespa fulvo-fasciata* Degeer. *Polybia fasciata* Lapeletier (1836) was also the same wasp.

Common in British Guiana: Pakaraimo Mts., head of Mazaruni River; Kamakusa; Warina, N. W. District; New River, a tributary of the Courantyne; Penal Settlement, Bartica District; source of Essequibo River; Rockstone, Essequibo River; Mt. Roraima; Baracara, Mazaruni River; mouth of Meamo River. Also known from French Guiana, Dutch Guiana, Brazil, Bolivia, Peru, Ecuador and Colombia.

STELOPOLYBIA PALLIPES (Olivier, 1791)

The unwarranted emendation "*pallidipes*" was first used by Dalla Torre (1894). The following names are either synonyms or based upon color forms: *Polybia anceps* de Saussure (1854); *Polybia lutea* Ducke

(1904); *Polybia myrmecophila* Ducke (1905); *Polybia festae* Zavattari (1906); *Polybia pallipes* var. *centralis* Cameron (1907); and *Polybia pallipes* subsp. *cuzcoensis* Schrottky (1911).

1. Olivier's original description reads: "Vespa pallide testacea, capite thoracisque dorso nigro maculatis, abdomine fusco apice pallido. Elle a environ cinq lignes de long [5 French lines = 12.3 mm.]. Les antennes sont noires, avec les premiers articles d'un fauve pâle en dessous. La tête est d'un fauve pâle, avec la partie supérieure tachée de noir. Le corcelet est d'un fauve pâle, avec trois lignes noires sur le dos. Le pétiole est fauve pâle. L'abdomen est obscur, avec la base d'un fauve pâle. Les pattes sont d'un fauve pâle. Les ailes sont transparentes." The French description agrees well with what Ducke (1910) called "*Stelopolybai pallidipes*" and de Saussure (1854, Et. Fam. Vesp., 2, Pl. XXV, fig 2) figures as "*Polybia pallipes*". In this typical form the abdomen has the first tergite (or petiole) pale fulvous, the second yellowish fulvous with infusate or blackish apical margin, the remaining segments blackish; there are no distinct yellow apical fasciae. *P. lutea* Ducke does not seem to differ from typical *pallipes*.

2. *S. pallipes* var. *anceps* (de Saussure) has most of the abdomen strongly infusate or blackish, with distinct yellow apical margins at least on tergites 2 and 3, sometimes also on 4 and 5; the yellow base of the second tergite is, as a rule, sharply defined from the fulvous discal area.

3. *S. pallipes* var. *festae* (Zavattari) is the extreme melanistic form of the species, with the body blackish-brown or black and few yellowish markings on head and sides of thorax (none on mesonotum or abdomen). It is known only from Eastern Ecuador (San José, 1800 m.). I have not seen it.

4. *S. pallipes* var. *cuzcoensis* (Schrottky) has the black abdomen of var. *festae*; head and thorax are profusely marked with yellow, as in the typical form. It appears to be characteristic of parts of eastern Peru: Achinamiza; La Chorrera, Putumayo; Chanchamayo. I have also seen it from Bolivia: Huachi, Rio Beni. It is evidently the form with black abdomen mentioned by Ducke from the Upper Amazon: Tabatinga; Iquitos.

5. *S. pallipes* var. (or subsp.) *fulvanceps*, new.

Female. Ground color orange to fuscous-yellow, darker on the dorsum of the abdomen, more yellowish ventrally; head and mesonotum with the same blackish markings as in the other forms of the species; narrow base of second tergite and broad and well-marked apical margins of tergites 2 to 5 bright yellow; tergite 6 mostly yellow.

Wings and legs as usual. This form combines the fulvous-orange abdomen of var. *myrmecophila* with the abdominal bands of var. *anceps*.

COLOMBIA: Rio Frio, Dept. Magdalena, holotype and paratypes (G. Salt). — PERU: Colonia Perene, paratype (J. C. Bradley); Puerto Bermudez, Rio Pichis, paratypes (J. C. Bradley); Miriantiriani, Camino del Pichis, paratypes (J. C. Bradley). — Holotype and paratypes at Mus. Comp. Zoöl., Cambridge, Mass.; paratypes also at Cornell University (Dept. of Entomology).

6. *S. pallipes* var. *myrmecophila* (Ducke) has the head and thorax of the typical form, but the abdomen is almost unicolorous pale yellowish-russet or orange, usually with more yellow bases of second and third tergites. Sometimes the apical margins of some of the tergites are very narrowly or faintly yellowish. *P. pallipes* var. *centralis* Cameron is clearly the same form, as was recognized by Ducke.

Typical *S. pallipes* was described originally from French Guiana (Cayenne) and I have seen it from British Guiana (Mt. Roraima), where it appears to be uncommon. I also know it from Brazil, Paraguay, and Peru (mouth of Rio Cotuhe)

The var. *anceps* is the usual form in British Guiana: Kamakusa; Kartabo; west bank of Demerara River. I have also seen it from Dutch Guiana, Trinidad, Brazil, Venezuela, Colombia, Panama and Bolivia.

The var. *myrmecophila* also occurs in British Guiana: Source of Essequibo River; Demerara River; Rupununi River. It is more widely distributed than any of the other forms, as I have seen it from Guatemala, Honduras, Costa Rica, Panama, Colombia, Ecuador, Peru and Brazil.

PSEUDOPOLYBIA H. de Saussure (1863)

The genus was revised in 1938 (Rev. de Entomologia, 9, pp. 112-113), but a new species is described below. Of the five species known at present, four occur in the Guianas.

1. Mesepisternum not divided by an oblique suture. Humeral margin of pronotum straight, bluntly ridged. First abdominal segment longer than wide, forming a broad stalk. Small; fore wing 5.5 to 6 mm. long. *P. pusilla*
- Mesepisternum completely divided by a well-marked oblique suture into an upper and a lower plate. 2

2. Small; fore wing 5.5 to 6.5 mm. long. First abdominal segment longer than wide, forming a distinct stalk, gradually widened from base to apex (seen from above). Clypeus slightly produced medially. *P. langi*
 Larger; fore wing 11 to 12 mm. long. First abdominal segment either cap-shaped, or, if stalk-like, not gradually widened from base to apex. Clypeus strongly produced medially. 3
3. First abdominal segment slightly longer than wide, forming a broad, bell-shaped stalk, set off from the remainder of the abdomen
P. difficilis
 First abdominal segment wider than long, cap-shaped and not set off as a stalk from the remainder of the abdomen. . . *P. vespiceps*

Pseudopolybia vespiceps (de Saussure, 1863) has been taken in French Guiana and Dutch Guiana, as well as in Brazil.

PSEUDOPOLYBIA PUSILLA (Ducke, 1904)

British Guiana: Monkey Jump, Essequibo River (Oxford University Exped.).

The species is also known from Brazil (Pará and Oyapoc). It is readily mistaken for a *Leipomeles*. It differs from *L. dorsata* in the much wider clypeus and stronger humeral transverse ridge. The nest is as yet unknown.

PSEUDOPOLYBIA DIFFICILIS (Ducke, 1905)

I have seen this species from British Guiana: source of Essequibo River. It is also known from Brazil, Peru, and Bolivia.

PSEUDOPOLYBIA LANGI, new species. Fig. 2

Female. Head moderately flattened, slightly wider than thorax; seen in front, slightly wider than high; from above, rectangular with receding hind corners, about twice as wide as long; occipital margin nearly straight. Vertex and genae not margined by a carina behind; gena scarcely narrower than the eye in profile. Oculo-malar space about half the length of the fourth antennal segment. Inner orbits about one and one-third times as far apart on vertex as at clypeus. Ocelli rather large, in an equilateral triangle; posterior ocelli about twice as far from eyes as from each other. Interantennal shield broad, not set off, strongly but bluntly and evenly swollen. Antennae nearly

twice as far apart as from eyes. Frons slightly convex. Clypeus at its narrowest about one and two-thirds times as wide as high, irregularly pentagonal with the upper side much the longest, contiguous to the eyes over nearly one-half of sides; apical margins slightly produced, ending in a very broad, obtusely rounded point. Mandible with an oblique cutting edge of four sharp teeth, the lower three subequal, the upper one much smaller; most of outer surface flattened or slightly depressed. Antenna: scape short and rather thick, scarcely curved;

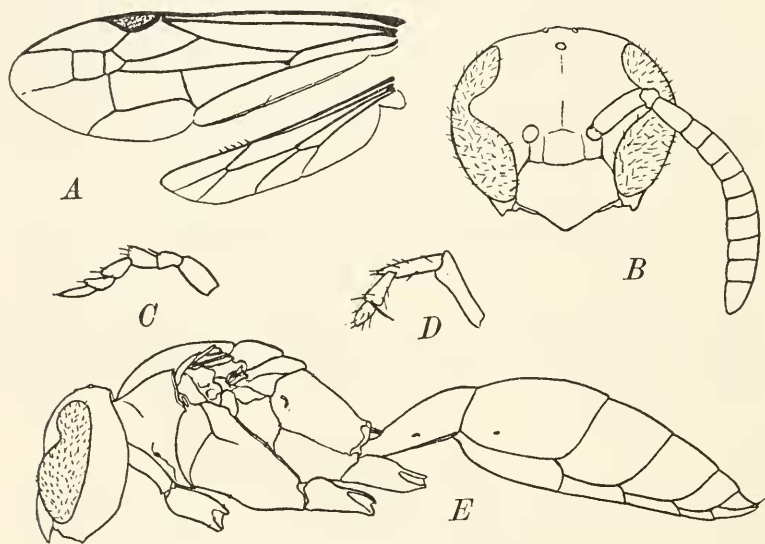


Fig. 2. *Pseudopolybia langi* J. Bequaert. Female. A, wings; B, head in front view; C, maxillary palpus; D, labial palpus; E, body in profile.

second segment short, moderately swollen; third less than three times the length of second; fourth and fifth about as long as wide; sixth to eleventh slightly wider than long; twelfth slightly longer than wide at base, with bluntly rounded tip; flagellum about equally thick throughout. Maxillary palpi of 6 segments. Labial palpi of 4 segments, the tip of the third with a short, heavy, erect, curved seta. Thorax moderately elongate; in profile, about one and one-third times as long as high; from above, nearly twice as long as wide before tegulae. Pronotum evenly rounded into a semi-circle anteriorly, the humeral margin barely indicated by a very weak transverse, blunt

ridge on the sides, where it forms no angles; dorso-lateral areas sloping; lower anterior margin of ventrolateral areas with a vertical swelling indented by a deep pronotal fovea. Mesopleuron moderately swollen; mesepisternum completely divided by an oblique suture into an upper and a lower plate; deep mesepimeral suture ending abruptly and far from the metapleuron. Upper sclerite of metapleuron ending obliquely below, with a short extension along mesometapleural suture. Scutellum slightly and evenly convex, anteriorly with a fine, raised, longitudinal line which continues posteriorly as an impressed line. Postscutellum transversely elliptical, moderately swollen. Propodeum not swollen, moderately slanting in profile; median concavity a broad, shallow, longitudinal groove. First abdominal tergite narrowed, moderately elongate, very gradually widened and thickened from base to apex, where it is less than half as wide as second tergite, triangular in outline from above. Second tergite from above wider than long, gradually widened at base; in profile, slightly and evenly convex. Mid tibiae with two spurs. Claws symmetrical, unarmed. Venation: second cubital cell much higher than wide; third cubital longer than wide, rectangular, about as long on cubitus as on radius; radial cell very long, acute; basal vein ending in subcosta close to the large stigma.

Smooth and moderately shiny, without appreciable punctures or other sculpture. Pubescence sparse and short. Eyes with many distinct erect hairs.

Head, thorax and legs pale yellowish, with a few fuscous areas on frons, vertex, occiput, pronotum, mesepimeral suture, propodeum (concavity and extreme sides), hind portion of postscutellum, and tibiae. Antennae fuscous above, russet below. Teeth of mandibles fuscous. Mesonotum fuscous, with a pair of broad median yellow stripes and a shorter yellow streak on each side near the tegula. Abdomen pale fuscous to light ferruginous, more or less yellowish at the base of the second tergite. Wings hyaline throughout; veins pale fuscous; stigma translucent medially.

Length (h.+th.+t.₁+2): 5.5 mm.; of fore wing, 5.6 mm.

BRITISH GUIANA: Kamakusa, female holotype and paratypes from one nest (Herbert Lang). Holotype and paratypes at Mus. Comp. Zoöl., Cambridge, Mass.; paratypes also at Am. Mus. Nat. Hist. and U. S. Nat. Mus.

The characteristic thick seta of the labial palpus is shorter than in some other species of the genus and, being of a pale color, is more difficult to see.

PARACHARTERGUS R. v. Ihering (1904)

This genus was revised by me in 1938 (Rev. de Entomologia, 9, pp. 105-112). Unfortunately I called it there *Chartergus*, in the belief that Ashmead (1902) was the first to select a genotype for that name. The late Miss Sandhouse informed me that Emile Blanchard in 1840 (Hist. Nat. Ins., 3, Orth. Névr. Hérm. Hym. Lép. Dipt., p. 395) had designated *Vespa nidulans* Fabricius (1793), a synonym of *Vespa chartaria* Olivier (1791), as the type of *Chartergus* Lepeletier. The name *Parachartergus* must therefore be used for the genus which I had called *Chartergus*.

Key to Guiana Species

1. Vertex and cheeks not separated from the occiput by a carina.
Humeral margin of pronotum erect, not overlapping nor touching the vertex. *P. frontalis*
Vertex and cheeks separated from the occiput by a sharp carina.
Humeral margin of pronotum slanting, touching or overlapping the vertex. 2
2. Vertex on each side, near the upper inner orbit, with a slightly raised, impunctate area. Smaller; fore wing 8 mm. long.
P. smithii
Vertex without impunctate lateral areas. 3
3. Body thickset, black. Humeral margin of pronotum low, ridge-like, opaque. Wings black, with the apical portion either somewhat paler or decidedly whitish. Fore wing 9 to 12 mm. long. . 4
Humeral margin of pronotum raised into a high, sometimes translucent lamella. Wings not black with paler or whitish tips. Fore wing 6.5 to 8 mm. long. 5
4. Head and thorax with distinct, long erect hairs. *P. apicalis*
Head and thorax covered with a grayish bloom, the erect hairs restricted to clypeus, postscutellum and propodeum.
P. fraternus
5. Body lengthened, black or ferruginous. Thorax over one and a half times as long as wide seen from above. *P. fulgidipennis*
Body short, thickset, mostly testaceous or russet. Thorax about one and one-third times as long as wide seen from above.
P. colobopterus

Parachartergus colobopterus (Weber, 1801) was taken in French Guiana and is known also from Colombia, Venezuela, and Trinidad.

Parachartergus frontalis (Fabricius, 1804), not yet reported from the Guianas, is known from the adjoining Oyapoc district of Brazil and Venezuela.

Parachartergus apicalis (Fabricius, 1804), frequently recorded from the Guianas, possibly does not occur there, as it is often confused with *P. fraternus*, which I regard as a distinct species.

PARACHARTERGUS FRATERNUS (Gribodo, 1891)

1. The typical form of this species has the tips of the wings whitish with pale veins, being colored exactly like *P. apicalis*. I have seen it from Dutch Guiana (Paramaribo).

2. In the var. *concolor* Gribodo (1891), the tips of the wings are somewhat paler but not whitish and have fuscous veins. I have seen it from British Guiana (Hepseba, Courantyne River; Arakaka), French Guiana, Brazil, Trinidad, Colombia, and Panama. It was first described from Venezuela.

PARACHARTERGUS FULGIDIPENNIS (H. de Saussure, 1854)

I have recognized by name five color forms of this species, two of which occur in the Guianas.

1. The var. *griseus* Fox (1898) has the thorax and abdomen black, the abdomen rather dull with many long hairs, and the head partly pale yellow. The wings are subhyaline, broadly black along the costal margin, without distinct cream-colored transverse patch. *Chartergus trichiosomus* Cameron (1912), described from British Guiana, is a synonym. I have seen this form from British Guiana (Moraballi Creek, Essequibo River), Brazil, and Peru.

2. In the var. *fasciipennis* Ducke (1905) the color of the body is as in var. *griseus*, but the abdomen is rather shiny, with sparse and short hairs, and the wings have a distinct cream-colored transverse patch, which interrupts the black streak along the costal margin. It was originally described from Brazil; but I have seen it from British Guiana: Ite Cattle Trail.

PARACHARTERGUS SMITHII (H. de Saussure, 1854)

The typical form of this species was taken in British Guiana: Kartabo. It also occurs in British Honduras, Costa Rica, Colombia, Ecuador, Peru, and Brazil.

LEIPOMELES Moebius (1856)

This genus is monotypic.

LEIPOMELES DORSATA (Fabricius, 1804)

W. A. Schulz (1912, Berlin. Ent. Zeitschr., LVII, p. 87) examined the type of *Polistes dorsata* Fabricius and recognized that it was the wasp described by Moebius (1856) as *Leipomeles lamellaria*. *Polybia nana* H. de Saussure (1863) and *Polybia spilogastra* Cameron (1912) are other synonyms.

British Guiana: Source of Essequibo River; Monkey Jump, Essequibo River. Fabricius' type came from the Essequibo River. Also known from Dutch Guiana, Brazil, Bolivia, Peru, Ecuador, and Panama (Barro Colorado).